DOCUMENT RESUME

ED 297 606 FL 017 540

TITLE	The Journal for the Society of Accelerative Learning and Teaching, Volume 11, Numbers 1-4, 1986.
INSTITUTION	Society for Accelerative Learning and Teaching, Inc.
PUB DATE	86
NOTE	301p.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	The Journal for the Society of Accelerative Learning and Teaching; v11 n1-4 1986
EDRS PRICE	MF01/PC13 Plus Postage.
DESCRIPTORS	*Acceleration (Education); Comparative Analysis; Concept Formation; Developmental Studies Programs; Educational Experiments; Elementary Secondary Education; English (Second Language); Foreign Countries; Higher Education; Imagination; International Education; Learning Disabilities; Mathematics Instruction; Mental Retardation; Music Activities; Music Therapy; Neurological Organization; Remedial Reading; Retention (Psychology); Second Language Instruction; Self Concept; Sentence Structure; Study Skills; *Suggestopedia; *Teaching Methods; Vocabulary Development; Writing Instruction; Young Children
IDENTIFIERS	East Germany; France; PASCAL Programing Language; United States

ABSTRACT

The four 1986 issues of the journal on suggestive and accelerative learning and teaching (SALT) include articles on these topics: SALT components in English composition instruction; music therapy for moderately retarded students; the brain and accelerated learning; accelerated learning and self-concept; remedial reading; versions of the concert session in suggestopedic instruction used in three countries; SALT and structural analysis in vocabulary instruction; SALT methods and English grammar and punctuation instruction; mobilization of the limbic system; suggestopedic research in East Germany; levels of suggestability in young children; acceleration of concept formation; college developmental mathematics; superlearning and retention; teaching paper characteristics to industrial paper users; the three-fingers technique; imagery as a teacher of study skills; mathematics and learning disabilities; fantasy journeys and self-concept; the PASCAL computer language with SALT in a large university class; and the transformation of international education. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED297606

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Volume 11, Number 1 Spring, 1986

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
D. Shuster

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FL017540

Published by the Society for Accelerative Learning and Teaching, Inc.

ISSN 0273-2459

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Guidelines for Contributors

The Editor welcomes submission of manuscripts on an interdisciplinary nature relevant to all aspects of suggestive learning-teaching-therapy counseling within the theoretical and procedural confines of Suggestology and/or Suggestopedia. The JOURNAL FOR THE SOCIETY OF ACCELERATIVE LEARNING AND TEACHING will publish a wide variety of articles - including critical reviews, theoretical analyses, speculative papers, case studies, quasi-experimental studies, as well as reports of empirical research (basic or applied) of major significance. The basic focus is Suggestopedia theory , research and application.

MANUSCRIPTS should be typed on one side of standard (8 ½ x 11 non-corrasable) bond typewriter paper, clearly mimeographed or multilithed. *Do not use ditto.* The original and three copies (carbon or dry electrostatic copies) should be submitted. Authors should also keep a personal copy to check against proofs. *All material must be double-spaced*, with ample margins (1 ½ in. on each side and 1 ½ on top and bottom). Any paper should not be longer than 20 typewritten pages, excluding bibliography, footnotes, tables, figures, etc. In special cases, longer papers may be submitted for publication.

REFERENCES should follow APA style. Authors should follow the standardized bibliographic format for reference citation as shown in the American Psychological Association Manual (1974). In the body of the text, the published work of others should be referred to by name and publication date in parentheses as follows, "Prichard and Taylor (1976) reported..." In the bibliography at the end, the referred-to articles should be listed fully in alphabetical order by author(s), title and publication source information as follows, "Prichard, A. & Taylor, J. Adapting the Lozanov method for remedial instruction. *Journal of Suggestive-Accelerative Learning and Teaching*, 1976 (Sum), 1(2), 107-115." Footnotes should be used to refer to unpublished material not generally available to readers, for example in the text, "Schuster claimed that relaxation..." A list of all footnotes should be typed on a separate sheet and placed between the end of the text and before the bibliography. An example of an entry in this list of footnotes is, "Schuster, D.H. The effects of relaxation and suggestions on the learning of Spanish words. Unpublished report, Psychology Department, Iowa State University, 1972, 6pp."

TABLES AND FIGURES should be kept to an absolute minimum and should supplement rather than duplicate text material. Each table should be typed on a separate sheet and be placed after the reference section of the manuscript. Figures should be submitted in a form suitable for photographic reproduction. Use India ink on a good grade of drawing paper. Photographs (black and white only) submitted as figures should be 5 x 7 inch glossy prints, uncropped and marked lightly on the back with a pencil. Submit all figures, photographs and tables with each of the four sets of manuscript materials.

ABSTRACTS between 50 and 200 words of each manuscript should be typed on a separate sheet and placed at the beginning of the manuscript.

PROOFS in typescript form of each article, letter to the Editor, brief communication, or book review will be returned to the author upon final acceptance of a manuscript. These are to be reviewed carefully and returned to the Journal's publication address within 5 working days. Typescripts not returned within this time limit will be considered approved. Authors are cautioned to read all tabular material and quotes against their copy of the original manuscript. Authors will receive 5 copies of their work on publication.

All manuscripts should be delivered by first class mail to:

Editor

The Journal of the Society for Accelertive Learning and Teaching
Psychology Department, Iowa State University, Ames, Iowa 50010

BEST COPY AVAILABLE

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE
LEARNING AND TEACHING

Volume 11 Number 1 Spring 1986

CONTENTS

SALT Components in the Teaching of English Composition
Jo Ann F Bass and Randall V Bass 3

A Musical Therapy Approach to SALT with Moderately Retarded Students
Randall Brown 13

The Brain and Accelerated Learning Part I Perception Pattern Recognition and the Hypothesis of Formative Causation
James D Hand and Barbara L Stein 25

Accelerated Learning and Self-Concept in Elementary and Secondary School
Pedro Portes and Carr Foster 33

A SALT Remedial Reading Class An Experimental Update
Allyn Prichard and Jean Taylor 41

Three Different Versions of the Concert Session in Suggestopedic Language Classes in France East Germany and the United States
Lynne Strudel 49

Book Review

The Japanese Brain Uniqueness and Universality
by Tadanobu Tsunoda
Reviewed by Gabriel Racle 57

The Society for Accelerative Learning and Teaching

Articles 60
Bylaws 61
Procedures for Affiliation

Don Schuster, Ph.D.
Editor

Kay Herr, Ph.D.
Associate Editor

Mary Whitney
Circulation

EDITORIAL BOARD

W. Jane Bancroft, Ph.D.
Scarborough College
Univ. of Toronto
West Hill, Ont. M1C 1A4

Owen Caskey, Ph.D.
8201 Edgemere
El Paso, TX 79925

R. McCral Cochrane, Ph.D.
Center for Cont. Development
64 Mountain St.
Sharon, MA 02067

Priscilla Donovan, Ph.D.
3050 S. Zenia St.
Denver, CO 80231

Kurt A. Fuerst, Ph.D.
Carleton University
Colonel By Dr.
Ottawa, Ont. K1S 5B6

Renate Nummela Caine, Ph.D.
California State Univ.
San Bernardino, CA 92407

Lyelle Palmer, Ph.D.
Winona State University
Winona, MN 55987

Pedro R. Portes, Ph.D.
School of Education
University of Louisville
Louisville, KY

Gabriel Racle, Ph.D.
1554 Rolland Av.
Ottawa, Ont. K1G 0J4

John Senatore, Ed.D.
Univ. of Southern Colorado
Pueblo, CO 81001

JoLene Somsky
3700 Orleans Av.
Sioux City, IA 51105

Win Wenger, Ph.D.
P.O. Box 332
Gaithersburg, MD 20877

Richard Wheeler, M.D.
5918 Windsor Dr.
Des Moines, IA 50312

Wendy Whitacre Stern
5381 W. Calle Conejo
Tucson, AZ 85745

For subscription, send order to: SALT Journal, Psychology Dept., Iowa State University, Ames, IA 50011. Subscription rates: $20.00 per year, individual subscription. Outside U.S. add $15.00 per year for air mail (Canada and Mexico, same as U.S.). Back issues $7.00 per copy, $12.00 per doubled copy. List of available back issues sent on request. Copyright 1986 by the Society for Accelerative Learning and Teaching, Psychology Dept., Iowa State University, Ames, IA 50011.

Mailing Permit 190, Ames, Iowa 50010

Printed in the U.S.A.

J. of the Society for Accelerative Learning and Teaching 1986, 11(1)

SALT Components in the Teaching of English Composition

Jo Ann F. Bass
and
Randall V. Bass

Reinhardt College

Abstract. The authors describe the use of physical relaxation exercises, mind calming activities, goal-setting imagery, and music in the teaching of English composition. The purpose of the method was to reduce anxiety associated with the writing task since the students were adults who had been out of the classroom for a number of years. To measure the attitudes of students toward the method, students completed the Listed Thought Procedure. Attitudes toward the method ranged from slightly favorable to strongly favorable and the quality of writing ranged from acceptable to outstanding.

* * *

Embarking on a college degree program can be stressful for anyone, but when the students have been out of school for a long time, going to college can create very complicated feelings of insecurity, fear, and anxiety. Adults are used to the security provided by their jobs, families, and daily routines. They have earned the respect of their peers and may even work in supervisory positions. They feel comfortable with themselves and with their lives.

Going to college after being out of high school for a number of years can disrupt students' daily routines as well as put their self-images under examination. There is less time for family activities because classes must be attended and homework must be done. Tuition, fees, and supplies may cause a financial strain on the family. Perhaps the greatest problem faced by these students, however, is the fear of failure--failure to live up to their expectations as well as the perceived expectations of their children, spouses, and co-workers. The 13 students in the freshman English composition class that we team-taught were full-time employees of the United States Postal Service and were in their first quarter of an associate of science degree program in Postal Management. The program was offered by Reinhardt College, a private two-year college affiliated with the United Methodist Church. The college is located in Waleska, Georgia, approximately 40 miles north of the greater Atlanta perimeter. For the convenience of the postal employees, this class and others in the Postal Management program met near the main Post Office in Atlanta.

Our students had been out of high school 10 to 30 years, and one woman was a grandmother. They were not accustomed to studying or writing. In addition to these circumstances, student schedules presented a problem. Many of our students arose each morning at 4:30, worked their regular shifts, and then attended class from 6:30 to 10:30 in the evening. Some of the students were enrolled for three courses, which meant they were in class three nights a week.

After reading papers in which students expressed feelings of anxiety about going to college, we decided to adapt the SALT method for use during the writing portion of our class. When the class met for the second time, we explained each step of the process to the students and highlighted some research which had shown the SALT method to be effective in enhancing learning. The class decided unanimously to participate in this learning procedure. The procedure included:

1. Making the writing assignment
2. Discussing the assignment
3. A physical relaxation exercise
4. A mind calming activity
5. A goal-setting imagery activity
6. Writing an essay while slow baroque music played in the background

Writing assignments were selected that would give the students practice in several areas of composition. We began with descriptive scenes and moved to letters, informative articles, comparison and contrast, persuasive writing, and argumentative discourse. Sometimes the topic was assigned; sometimes students were allowed to choose the topic on which they would write as long as their papers complied with the assigned category of composition. Students wrote an essay in class, and one was also written for homework each week.

The instructors and students discussed the assignment to make sure the students understood what was expected of them. A free exchange of ideas for topics and ways to approach the assignment was encouraged. Often the instructors provided facts or an article from a newspaper or magazine for students to read and discuss, thereby expanding their background knowledge of a topic.

In the next part of the lesson, one of the instructors led the students in the physical relaxation exercise lasting about one minute. Four exercises were written by one of the instructors, and one of the exercises was used each time the class met. These physical relaxation exercises involved mainly the neck and shoulder muscles in holding and releasing movements designed to ease muscular tension in these areas (see Appendix A).

A mind calming activity followed the physical relaxation exercise. Four activities, each lasting about three minutes, were written by one of the instructors and then tape recorded by the instructor to assure accurate reading and correct timing. One of the activities was used with each lesson. For these mind calming activities, the students were asked to sit in a comfortable position, close their eyes, breathe in a slow rhythm, and imagine the pleasant scenes in nature as they were described by the instructor (see Appendix B).

Immediately following the mind calming activity, the instructor asked the students to maintain their physically and mentally relaxed state while they were led in a goal-setting imagery activity. The activity was approximately one minute long. The students were asked to visualize themselves having accomplished the goal of the lesson. In other words, the students were asked to see themselves writing in a relaxed manner, feeling good about their finished paper, and seeing a good grade on the paper when it is returned (see Appendix C).

When the five minutes of preliminary preparation were completed, the instructors started a tape of baroque music with 60 beats per minute and students began to write. Superlearning tape 803, which contained 20 minutes on each side, was rerecorded so that we had a tape of 40 minutes of uninterrupted music. The students were encouraged to take their time and think about what they were going to write before they put any words on paper. They were told to write on scratch paper the main ideas that they wanted to cover in the paper and to arrange these ideas in an order which they thought would make a readable paper. The main ideas were then developed into paragraphs and a composition. During the actual writing portion of the lesson, the students were allowed to leave the room and take breaks whenever they felt it necessary. This way the students could learn to monitor themselves for signs of tension and take steps to alleviate the tension. Sometimes, however, the students chose to remain in the room, close their eyes, and listen to the music for a few minutes to ease the tension.

As stated earlier in this paper, the main purpose of the method that we implemented was to reduce the anxiety associated with going to college after a long absence from the classroom and specifically to reduce the anxiety associated with the writing task. To measure the attitudes of the students toward the method and to determine whether or not students felt the method helped them to relax, we asked them to complete the Listed Thought Procedure (LTP) during the last class. Cullen (1968) compared the LTP with two procedures: the Thurstone procedure in which subjects indicate whether or not they agree with each item in a standard set of statements, and the Likert-type procedure in which subjects indicate the extent to which they agree or disagree with each item in a standard set of statements. The LTP fell between the two procedures in split-half and test-retest reliability, with the Likert-type procedure being the most reliable of the three. Test-retest reliabilities of .62 and .66 were reported with the LTP. When the LTP was compared with a four-item Likert-type scale, the LTP was found to be as sensitive to attitude change as the Likert-type scale.

For the LTP, the students were given two sheets of paper containing 14 items with blank lines. First, students were asked to write their thoughts pertaining to the method of teaching that we used with the class. We reminded the group that we had used physical relaxation exercises, mind calming activities, and music. Students were told that they could write anything they wanted to about these components or the total method and that their comments would in no way affect their grades. Ten minutes were allowed for writing the statements.

Next, the students were asked to reread each item that they wrote and decide if the statement was favorable to the method or against the method. They were then instructed to circle the F to the left of each item that was for the method and to circle the A to the left of each item that was against the method. If the statement was neither for nor against the method, students were told to circle both the F and the A. Students were assured that it was all right of have some negative statements and that we wanted them to be completely honest.

Last, the students were asked to decide the degree to which each statement supported or opposed the teaching method. The students were instructed to circle the 1 if the statement indicated slight support or slight opposition, to circle the 2 if the statement indicated moderate support or moderate opposition, and to circle the 3 if the statement indicated strong support for or strong opposition to the method. If both the F and the A were circled to indicate a neutral statement, no numbers were circled.

An attitude score was calculated for each student. The possible range of these scores was -3.00 to 3.00. The scores of students in our class ranged from 1.33 to 3.00, indicating that their attitudes toward the method ranged from slightly to strongly favorable. The mean attitude score was 2.4.

The number of statements written by students on the LTP ranged from 3 to 12. Of the 77 statements written by the students, 64 statements were favorable to the method, 5 were against the method, and 8 were neutral. Given another way, 83% of the statements favored the method, 7% opposed the method, and 10% were neutral.

One student who favored the method wrote on the LTP, "Your use of these teaching methods was helpful to most of us." Another student who had an opposing statement said, "Mind calming and music did not seem appropriate while writing articles such as why are there so many illiterate Americans or writing about the Bitburg Cemetery visit." Students who made neutral statements tended to write about the class in general. One said, "Writing has become easier to me because of the weekly practice in our English class."

We looked at the LTP forms and categorized students' statements according to the components of physical relaxation, mind calming, and music. On the forms, 18 statements mentioned the physical relaxation exercises. Of these statements, 83% favored the exercises, 6% opposed them, and 11% were neutral. Student 2 wrote a favorable comment: "The physical relaxation helped after eight hours of work and pressure." Student 9 reported a phenomenen noted by Lozanov (1971/78). She said, "The exercises we did helped to get rid of our headaches." Student 3 wrote of applying the techniques in his job situation. He stated, "The physical relaxation has helped me not only in the class but on my job. When I have a difficult problem, I step back and do the neck and shoulder exercises and try to relax before continuing." The only negative statement was helpful to us as teachers. Student 13 wrote, "We should have done muscle relaxing exercises before the final exam!" The neutral statement written by Student 5 was also constructive. She said, "I believe more relaxation time would have been beneficial."

The mind calming activities generated the most statements on the LTP. Twenty-five statements were written with 96% being for the activities, 0% against them, and 4% neutral. Student 4, who favored the activities, said, "The mind calming seemed to do the most for me. With the mind calming sequence, I was able to put myself in total relaxation." Student 11 supported the activities by saying, "The tapes describing nature's beauty did have a calming effect on the mind." The one neutral comment by Student 13 said, "I would like a copy of that tape (A Walk in the Park)."

The playing of slow baroque music while students wrote their compositions drew 23 comments on the LTP. The comments were grouped as follows: 83% favored the music, 13% opposed it, 4% were neutral. Students thought the music was good for different reasons. Student 3 wrote, "When I would hit a snag in my thinking, the music kept me calm and able to work my way out of it." Student 10 said, "Playing the music seemed to slow down the pace after a long day at work." Apparently Student 6 became too relaxed and opposed the music. She wrote, "The soft music after the mind calming exercise made me sleepy after working 12 1/2 hours." One of the three negative statements about the music suggested that a variety of tapes should have been used. Student 5 said, "The same music got boring as classes went by."

During the 10 sessions, students were graded on 14 compositions and three grammar tests. The compositions had two grades--one for content and one for mechanics. The 31 grades for each student were averaged for the final grade in the course. Of the 13 students, 4 students made A's, 5 made B's, and 4 made C's. It should be remembered that these students had been out of school a number of years and that correct grammar was not used by several students in everyday speech.

Based on the comments made by students on the LTP, the SALT components that we incorporated into our English class appeared to be beneficial in helping the students to relax before and during the writing process. We think that the SALT components definitely have a place in the English composition class and also in the adult education program. We would like to make the following suggestions to other teachers who are interested in using SALT in similar situations.

1. The preliminary preparation should be increased from five minutes to at least 15 minutes when classes meet in the evening. Some students indicated that more time was needed to unwind after a hard day at work.
2. Relaxation periods should be used before teaching grammar and taking tests as well as before writing compositions. Since our class period was four hours long, we should have had the physical and mental relaxation activities at the beginning of class and again at the midpoint.
3. We feel that goal-setting imagery in which students see themselves as successful in learning situations should be stressed. Although we used this technique, we perhaps did not place the proper emphasis on it since goal-setting imagery was not mentioned by students on the LTP.
4. Teachers might want to experiment with different types of music during the writing portion of the lesson. Music that has some rousing sections might be appropriate to use when students are writing essays on subjects which tend to stir the emotions. Perhaps the music could be matched with the writing topic to capture mood.
5. A number of music tapes should be used to avoid boredom.

Overall, we were pleased with the results achieved in the composition class. Thirteen students who had done little if any writing for a number of years were willing to attempt fairly complex writing tasks by the end of the course. The quality of their writing ranged from acceptable to outstanding. We feel such progress would not have been possible using conventional methods of instruction.

* * * * * *

References

Cullen, D.M. (1968). Attitude measurement by cognitive sampling. *Dissertation Abstracts International, 29,* 1597A.

Lozanov, G. (1978). *Suggestology and outlines of suggestopedy* (M. Hall-Pozharlieva & Pashmakova, Trans.). New York: Gordon and Breach. (Original work published 1971)

* * * * * * * * *

Appendix A

The Shoulder Stretch

Let's start the lesson with an exercise to help you become physically relaxed. You will need to stand beside your chair. Have your arms hanging by your sides, like this.

I'll show you how the shoulder stretch is done. (The instructor stands and faces the students.) Slowly bring your arms up and forward as if you were about to hug someone. Let your arms cross and pull your shoulders forward until your shoulders and upper back are rounded. Hold the position to the count of 1-2-3-4-5. Now uncross your arms and push your arms back as far as they will go. Hold the position for five counts 1-2-3-4-5. We'll do the exercise three times.

Ready? Begin. Bring your arms forward. Hold them there 1-2-3-4-5. Now push your arms back. Hold the position 1-2-3-4-5. Again. Forward and cross. Hold 1-2-3-4-5. Back and hold 1-2-3-4-5. Last time. Forward and hold. 1-2-3-4-5. Back, hold 1-2-3-4-5. Return to your original position and relax. Please be seated.

Appendix B

A Walk in the Park

Please sit in a comfortable position. Breathe in a slow, relaxed rhythm. Keep your eyes closed lightly.

Imagine your are strolling in a park on a warm spring day. The sky is blue with only a few puffy white clouds dotted about. You feel a gentle breeze blowing on your face and bare arms. It is quiet and peaceful in this park.

You stop for a moment and enjoy the beauty of the season. To your right you see bright pink azaleas clustered around the bases of tall green pine trees. Straight ahead the stone walk splits to form a circle around a dogwood tree, white with blooms. To your left you see a small stream with a white bridge spanning it.

You walk through the cool, green grass and onto the wooden bridge. You stop, lean on the rail, and look down into the water. The water is only a few inches deep and your see rust, tan and gray stones lining the stream bed. As you look at the water, you notice a white dogwood blossom floating by. You watch it drift along slowly for a while. The blossom looks smaller and smaller as it floats farther downstream. Finally, it is out of sight.

You stand on the bridge and listen to the water as it gently flows over the rocks. You feel completely relaxed and free of tension.

Appendix C

Goal-setting Activity

Please retain your physically and mentally relaxed feeling. I want you to close your eyes and visualize the room we are in. See the walls, the chalkboard, the tables, the teachers, and your fellow students.

Now focus on yourself. Imagine yourself sitting at your place with your paper before you and your pen in your hand. Your are relaxed as you think about the things you want to express in your composition. The ideas come to you easily. See and feel yourself writing these ideas on your paper. The process is going smoothly. Your are pleased with yourself and with the composition that is being written. You have a pleasant expression on your face. You sit back from time to time and breathe deeply to give yourself a break and to help yourself to remain calm.

Now see yourself as you finish writing. You lean back and read the paper you have written. You are pleased with the way it turned out. A smile comes across your face and you turn in your paper knowing that you have done your best.

Now imagine yourself sitting in your place next week. The instructor has just handed you your paper and you are looking at it. You see a good grade at the top of the page, and you smile. You feel happy and proud.

Be confident in your ability to write. Your may open your eyes as we begin the music for writing.

*** *** *** ***

Composants SALT dans l'Enseignement de la Composition Anglaise

Les auteurs decrivent l'usage des exercises physique de relaxation, des activites qui calme l'esprit, creer des images pour etablir des buts, et la musique dans l'enseignement de la composition anglaise. Le but de la methode etait de reduire l'angoisse associe avec la tâche de l'ecriture puisque les etudiants etaient des adultes hors du milieu de la classe depuis de nombres annees. Pour evaluer les attitudes des etudiants envers la methode, les etudiants ont complete la procedure de pensee lister.

SALT Komponenten im Englischaufsatzunterricht

Die Autoren beschreiben die Anwendung von Körperentspannungsubungen, geistberuhigende Aktivitäten, zielsetzende Verbildlichung und Musik im Englischaufsatzunterricht. Der Zweck der Methode war es, die Beangstigung, die mit dem Akt des Schreibens assoziiert ist, zu vermindern. Die Studenten waren Erwachsene, die seit Jahren das Klassenzimmer verlassen hatten. Um die Einstellung der Studenten zur Methode zu messen, fullten sie den "Aufgezahlte Gedanken Bogen" aus. Die Einstellung zur Methode bewegte sich von leicht forderlich bis stark forderlich und die Qualitat des Schreibens erstreckte sich von annehmbar bis ausgezeichnet.

Componentes SALT en la Enseñanza de Redaccion en Ingles

Los autores describen el uso de ejercicios de relajacion fisica actividades para calmar la mente imagineria en establecimiento de metas y musica en la enseñanza de redaccion en ingles El proposito del metodo era la reduccion de ansiedad asociada con redaccion ya que los estudiantes eran adultos que habian estado fuera de clase varios años Para medir su actitud hacia el metodo los estudiantes completaron el Listed Thought Procedure Actitudes hacia el metodo variaron desde ligeramente favorables a muy favorables y la cualidad de redaccion vario desde aceptable a sobresaliente

J. of the Society for Accelerative Learning and Teaching, 1986, 11(1)

Suggestive-Accelerative Learning and Teaching in Special Education

Randall Brown
Central Lafourche Developmental Training Center

Abstract. The purpose of this study was to compare the effectiveness of three teaching strategies with moderately retarded subjects. Group one studied Aesop's fables using traditional Suggestive-Accelerative Learning and Teaching (SALT) Techniques. Group two studied the fables using SALT techniques minus the passive review. Group three was taught using rote learning techniques. Subjects participating in the study were 15 verbal moderately retarded students. The experimental period encompassed seven sessions, each 45 minutes in duration. Students were tested for recall of plot sequence, significant characters, and the fable's moral. Results of the study revealed the following: 1) both SALT groups performed better than the rote learning group on daily scores ($p<.025$) and on a final comprehensive examination ($p<.05$), 2) no significant differences were found between the two SALT groups for daily scores or the final examination, and 3) a repeat of the comprehensive examination after a three-month summer vacation showed that the two SALT groups again exhibited significantly better scores than the rote learning group.

* * *

Many of the 14 principle elements of Suggestive- Accelerative Learning and Teaching (SALT), as defined by Caskey (1980), have been successfully used with mentally retarded clients. Warner and Mills (1980) found that goal setting positively effected the manual performance rates of five moderately retarded adolescents. Connis (1979) showed that sequential pictorial cues, along with self-recording and praise in the job task, increased the portion of independent task changes for four mentally retarded adults, which was maintained for more than ten weeks after the removal of the training procedure. Carter (1979) reported significant increases in cognition, memory and handwriting for eight educable mentally retarded boys by using biofeedback training. Roskam (1979) investigated the use of music activities designed to improve auditory perception and language skills with 36 learning disabled children. The students were divided into three groups, prescriptive music therapy, language development activities, and a combination of the two. Results indicated that the prescriptive music therapy group showed the highest mean difference in the pretest-posttest scores, though an analysis of variance did not reveal any significant differences between the effectiveness of the three approaches.

Myers (1979) studied the effects of two presentation methods of a paired-associate work task with 18 educable mentally retarded children. The two presentation methods were 1) word pairs embedded in the form of a story, and 2) word pairs embedded in a song. Scores between the two presentations were found to be very similar for both formats, while behaviors noted during the song format seemed to suggest that the music setting provided a more enjoyable atmosphere.

Those who are familiar with SALT techniques have recognized the similarities between SALT and the previous mentioned studies. One of the strengths of the SALT method is that it successfully combines these techniques to enhance learning. The purpose of this study was to compare the effectiveness of three teaching strategies with moderately retarded subjects. Group one studied seven Aesop fables using traditional SALT method techniques. Group two studied the fables using the same SALT techniques minus the passive review, while group three was taught using rote learning techniques. The following hypotheses were tested:

1. Groups one and two using SALT techniques will not show a significantly greater number of correct answers to questions asked about the seven fables than group three using a rote learning method.
2. Group one using the passive review will not show a significantly greater number of correct answers than group two using SALT techniques without the passive review.

Method

Subjects

The subjects participating in this study were 15 verbal, moderately retarded noninstitutionalized students, ages 6 to 21. They were attending the Central Lafourche Developmental Training Center in Mathews, Louisiana. Subjects are described in Table 1.

Table I Subjects' Age and Group

Group III		Group II		Group I	
Subjects	*Age*	*Subjects*	*Age*	*Subjects*	*Age*
1	16	6	18	11	21
2	15	7	14	12	17
3	11	8	12	13	13
4	7	9	12	14	6
5	7	10	7	15	6
Average	11.2		12.6		12.6

Materials

The materials used in this study were a Bell and Howell tape recorder model 3081b Seth Thomas metronome model e500-000 simple props for enacting the fables type A and B background music picture sequences of the fables adapted from the sheet music and recording of Aesop's Fables in Song by George Mysels (Shawnee Press N-194) and test sheets for recording student responses

Procedure

The subjects were randomly assigned to the three groups They met for seven sessions each 45 minutes in duration The teacher used desuggestive barrier circumvention as described by Schuster Bordon and Gritteri (1976) throughout the sessions to establish a suggestive atmosphere

The class used the following sequence of stretching exercises to settle down and begin each session

1 arm stretching to the ceiling
2 bending over and swaying
3 touching the ears with the shoulders
4 yawning with the tongue out
5 tensing the hands and arms and then relaxing
6 tensing the feet and legs and then relaxing

Next followed five-minutes of mind calming early pleasant learning restimulation and goal setting Goal setting for these sessions was a chance to recall a plot sequence the significant characters and the moral of the fable in preparation for performing one of the fables before the school Personal experience has taught the author that there can be remarkable changes in both behavior and academic performance in students who have experienced success through musical and/or theatrical performances in the presence of their peers and significant others Halpern's Eastern Peace was used for background music during this period

A few minutes were used to briefly review the fables previously covered Then the fable of the day was first presented from the recording of Aesop's Fables in Song Students listened while watching the plot picture sequence for that fable Then type A music followed while the fable was read by the author to the students along with the same plot picture sequence

Before the passive review students practiced the 2-4-2 breathing pattern with the aid of the metronome The fable was then reread coordinated with type B music

A skit was next Each student took turns portraying a character of the new fable using a mask or minor prop As the fable was read the students enacted their character These skits were performed three times so each student would have a chance to enact the character they most desired.

The last section consisted of a quiz on the new material. The students were asked questions similar to the questions which would be used later to determine the daily scores. There was a short pause and then the class was cued to complete the sentence or restate the moral.

The second SALT group followed the same procedure as the first SALT group except that the passive review was substituted with a second active review of the material. The rote learning group was read the fable while looking at the few pictures provided in the text. They then reviewed the story and were asked the same questions about the fables. This process was repeated three times for the new fable.

At the end of each session, all students were tested individually for retention of new class material. The test consisted of five oral completion questions covering plot sequence, significant character recognition, and stating the moral of the fable. At the end of the seven sessions, each student was given a comprehensive examination using the 35 questions from the daily tests. Three months later the students received the same comprehensive examination to test for long-term retention.

Results

Before beginning the experimental period each student was administered the final comprehensive examination to determine if there was any prior knowledge of the fables. Out of 35 possible correct answers, the rote learning group answered four correctly, and the two SALT groups answered two correctly in each group. Gain scores from initial to final examination were used to test for significant improvement. Two one-way analyses of variance (Bruning & Kintz, 1977) were conducted by summing the daily examination scores and also by summing the comprehensive examination scores. Both ANOVA's showed a significant F value at the .025 significance level for daily scores and at the .05 significance level for comprehensive scores. Duncan's multiple-range test (Bruning and Kintz, 1977) was used to compare group means for significant differences. The SALT group with the passive review (SALT II) showed a significantly greater improvement ($p < .05$ than the rote learning group (control) for both daily scores and comprehensive scores. The SALT group without the passive review (SALT I) showed a significantly better score than the rote learning group, ($p < .05$) for daily scores, but barely missed significance ($p < .05$) for comprehensive scores. The results between the two SALT groups did not show any significant differences. These data are displayed in Table 2 and 3.

Table II. Comparison of Daily Scores
Analysis of Variance: Completely Randomized Design

Group III		Group II		Group I	
Subject	*Score*	*Subject*	*Score*	*Subject*	*Score*
1	22	6	24	11	17
2	10	7	28	12	28
3	16	8	23	13	34
4	13	9	19	14	22
5	9	10	19	15	20
Average	14.2		22.6		24.2

Source	SS	df	ms	F	p
Total	652.9373	14	--	--	--
Between Groups	300.9333	2	150.466	5.129	.025
Within Groups	352.0039	12	29.333	--	--

Duncan's Multiple-Range Test
Results for Significant Differences Between Group Means

Means	Group III *Control* 14	Group II *Salt I* 22.6	Group I *Salt II* 24.2	Shortest Significant Ranges
III-14		8.6*	10.2*	R(2)= 7.46
II-22.6			1.6	R(3)= 7.823
I-24.2				

* Significant at the .05 level

Table III. Comprehensive Scores
Analysis of Variance. Completely Randomized Design

Group III		Group II		Group I	
Subject	*Score*	*Subject*	*Score*	*Subject*	*Score*
1	28	6	27	11	20
2	11	7	30	12	30
3	14	8	26	13	34
4	13	9	19	14	24
5	8	10	16	15	23
Average	14.8		23.6		26.2

Source	SS	df	ms	F	p
Total	861.7333	14	--	--	--
Between Groups	356.9333	2	178.46655	4.2424	.05
Within Groups	504.89	12	42.0669	--	--

Duncan's Multiple-Range Test
Results for Significant Differences Between Group Means

Means	Group III *Control* 14.8	Group II *Salt I* 23.6	Group I *Salt II* 26.2	Shortest Significant Ranges
III-14.8		8.4	11.4*	R(2)= 8.932
II-23.6			2.6	R(3)= 9.367
I-26.2				

* Significant at the .05 level

The first hypothesis, which stated that the two SALT groups would not perform significantly better than the rote learning group was rejected on the basis of daily scores for both SALT groups, the comprehensive scores for the SALT group with passive review, and nearly rejected by the comprehensive scores for the SALT group without passive review. The second hypothesis stating that the SALT group with passive review would not show significantly greater gain score improvement over the SALT group without the passive review was confirmed.

All students were retested after their three-month summer vacation. Results of the same comprehensive test showed that the two SALT groups again exhibited significantly greater gain scores than the rote learning group. The two SALT groups showed no significant difference between their scores. Thus after three months without review of the test material, the first hypothesis stating that the two SALT groups would not show significantly better gain scores than the rote learning group was still rejected. The second hypothesis proposing that the SALT group with passive review would not score significantly better than the SALT group without the passive review continued to be realized. These data are given in Table 4.

Discussion

The results of the study were encouraging for the author in light of the less than desirable conditions. Class size was limited to five because of the confines of the work area, an eight by ten room containing a piano, a desk, trap-set, and other musical instruments. This produced a cluttered effect which detracted from the desired pleasant physical environment. Since the same music therapist had worked with these students before implementation of the study, many of the suggestive and noncritical correction techniques had been used with all of the students.

The lack of a significant difference between the SALT groups may be attributed to several students experiencing difficulties in breathing coordination. A tape recording was made for the passive review with a voice telling the students when to breathe dubbed over the music. Prichard (1976) improvised a tape with clicks for his third and fourth grade remedial reading students to cue a straight four count inhalation and exhalation. This use of tapes improved breathing performance, but the short experimental period in this study did not allow students to master the breathing techniques.

Teacher experience may have played a part in the lack of difference between the SALT groups. This was the author's first experience after attending a 35 hour workshop on SALT taught through the Iowa State University Continuing Education Department. Schuster and Prichard (1979) in a two year study of SALT drew most of their conclusions from the second-year-data. These

Table IV Comprehensive Scores After Three Months
Analysis of Variance Completely Randomized Design

Group III		**Group II**		**Group I**	
Subject	*Score*	*Subject*	*Score*	*Subject*	*Score*
1	23	6	23	11	14
2	9	7	28	12	28
3	11	8	22	13	31
4	11	9	20	14	22
5	4	10	19	15	21
Average	11.6		22.4		23.2

Source	SS	df	ms	F	p
Total	838.933	14	--	--	--
Between Groups	419.733	2	209.87	6.01	.025
Within Groups	419.209	12	34.93	--	--

Duncan's Multiple-Range Test
Results for Significant Differences Between Group Means

Means	**Group III** *Control* 11.6	**Group II** *Salt I* 22.4	**Group I** *Salt II* 26.2	Shortest Significant Ranges
III-11.6		10.6*	11.6*	R(2)= 8.14
II-22.4			8	R(3)= 8.54
I-23.2				

* Significant at the .05 level

teachers had attended at least a 120-hour workshop on SALT. Lozanov (1977) claims that the Bulgarian Suggestopedia teachers are trained in an intensive two-month period.

This study produced several encouraging observations, the major one being the eagerness of the students in the SALT groups to ask when their next class would be held. Several students who were noted for their problem behaviors cooperated with enthusiasm. A nondiagnosed hyperactive-type child was calmed during the 2-4-2 breathing patterns. Finally, there was less time spent trying to obtain order and redirect student attention back to task in the SALT groups as compared to the rote learning group.

In summary, the SALT method produced a pleasant atmosphere for both the teacher and students while significantly increasing their learning achievement. Behavior patterns improved and enthusiasm ran high. The lack of greater gains proposed for the SALT group with passive review over the SALT group without the passive review may be attributed to a lack of teacher experience with SALT and the brevity of the experimental period. The potential for calming hyperactive students warrants further investigation. SALT techniques appear to be a welcome relief for the frustrations of this student population who normally spends an extended amount of time mastering a limited amount of academic material. The author intends to continue with SALT techniques in the following year.

* * * * * *

References

Bruning, J. & Kintz, B. (1977). *Computational Handbook of Statistics*. (2nd ed.) Glenview, IL: Scott, Foresman and Co.

Carter, J. Application of biofeedback/relaxation training to exceptional children. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 1979. 21 pp. ERIC No. Ed 169 739.

Caskey, O. (1980). *Suggestive-Accelerative Learning and Teaching*. Englewood Cliffs, New Jersey: Educational Technology Publications. The Instructional Design Library, 36.

Connis, R. (1979). The effects of sequential pictorial cues, self-recording, and praise on the job task sequencing of retarded adults. *Journal of Applied Behavior Analysis, 12,* (3), 353-361.

Lozanov, G. (1977). The Bulgarian experience. *Journal of the Society for Accelerative Learning and Teaching, 2,* (3&4), 85-95.

Meyers, E. (1979). The effects of music on retention in a paired-associate task with educable mentally retarded children. *Journal of Music Therapy, 16,* (4), 190-198.

Prichard, A. (1976). Lozanov-type suggestion techniques for remedial reading. *Journal of the Society for Accelerative Learning and Teaching, 1,* (4), 294-303.

Roskam, K. (1979). Music therapy as an aid for increasing auditory awareness and improving reading skills. *Journal of Music Therapy, 16,* (1), 31-42.

Schuster, D., Bordon, R. & Gritton, C. (1976). *Suggestive-Accelerative Learning and Teaching: A manual of classroom procedures*

based on the Lozanov method. Ames, Iowa: Society for Accelerative Learning and Teaching.

Schuster, D. & Prichard, A. (1979). *Suggestive-Accelerative Learning and Teaching (SALT) in the classroom.* Paper presented at the American Psychological Association convention, Sept. 1979, New York. ERIC No. ED 179 537.

Warner, D. & Mills, W. (1980). The effects of goal setting on the manual performance rates of moderately retarded adolescents. *Education and Training of the Mentally Retarded, 15,* (2), 143-147.

*** *** ***

L'Erudition et l'Enseignement Suggestive-Accelerer en Education Speciale

L'objet de cette etude etait de compare l'efficacite de trois strategie d'enseignement avec des sujets moderament arrieres. Le premier groupe a etudier les contes d'Aesop utilisant les techniques Salt traditionnels Suggestive-Accelerer d'apprentissage et d'enseignement. Le deuxieme groupe ont etudie les fables utilizant les technique Salt sans la revision passive. Le troisieme groupe a ete enseigne les techniques Rote (methode par coeur). Il y avait quinze participants d'etudiant moderament arriereres et verbale dans cette etude. La periode d'essai comprenais sept sessions, chaqune de 45 minutes. Les etudiants ont ete mit a l'epreuve pour ce rappeller de la sequence des complots, les personnages important et la morale de l'histoire. L'etude a revele les resultats suivants: 1) Les deux groupes Salt ont accompli de meilleurs resultats que le groupe d'enseigement Rote des point journalier ($p < .025$) et sur un examin final comprehensif ($p < .05$), 2) aucune difference importante a ete etablie entre les deux groupes por les points journalier ou les examens finale, et 3) apres trois mois de vacances d'ete l'examens comprehensif a ete repete demontrant que les deux groupes Salt avait encore produit de meilleur resultats que le groupe d'enseignement Rote.

Suggestiv-Beschleunigendes Lernen und Lehren im Sonderunterricht

Der Zweck dieser Studie war es die Wirksamkeit von 3 Lehrmethoden bei leichtbehinderten Schulern miteinander zu vergleichen. Gruppe 1 nahm Aesops Fabeln durch mit der traditionellen Suggestiv-Beschleunigenden Lern- und lehrmethode (SALT). Gruppe 2 nahm die Fabeln durch mit der SALT Methode, jedoch ohne die passive Wiederholung. Gruppe 3 wurde mit Auswendiglernmethoden unterrichtet. Die an dem Versuch teilnehmenden Schuler waren 15 verbal leichtbehinderte Schuler. Die Versuchszeit umfasste 7 Unterrichtseinheiten, jede 45 Minuten lang. Die Schuler wurden bezuglich Erinnern des Handlungsablaufs, wichtiger Charaktere und der Moral der Fabeln getestet. Das Ergebnis der Untersuchung zeigte folgendes: 1. Beide SALT Gruppen schnitten besser ab als die Auswendiglerngruppe, sowohl in taglichen Tests ($p < .025$) als auch in der Abschlussprufung ($p < .05$). 2. Keine bedeutenden Unterschiede wurden festgestellt zwischen den zwei SALT Grup-

pen in den taglichen Tests oder der Abschlussprufung. 3. Eine Wiederholung der Abschlussprufung nach dreimonatigen Sommerferien zeigte erneut, dass die zwei SALT Gruppen wieder bedeutend bessere Resultate als die Auswendiglerngruppe erbrachten.

Aprendizaje y Enseñanza Sugestiva Acelerada en Educacion Especial

Este estudio tuvo como proposito el comparar la efectividad de tres metodos de enseñanza sobre sujetos moderadamente retardados. El primer grupo estudio fabulas de Isopo utilizando metodos tradicionales de Aprendizaje y Enseñanza Sugestiva-Acelerada (SALT). El segundo grupo estudio las fabulas usando los metodos SALT con la excepcion del repaso pasivo. El tercer grupo fue enseñado utilizando metodos de memorizacion de coro. Los sujetos fueron 15 estudiantes moderadamente retardados, pero verbales. El periodo de experimentacion incluyo siete sesiones, cada una de cuarenta y cinco minutos de duracion. Se probaron los estudiantes para su memoria de la secuencia del argumento, de los personajes principales y de la moraleja de la fabula. Los resultados del estudio revelaron lo siguiente – 1) los dos grupos SALT hicieron mejor que el grupo de memorizacion de coro tanto en puntuaciones diarias ($p < .025$) como en un examen comprensivo final ($p < .05$), 2) no se encontraron diferencias entre los dos grupos SALT en puntuaciones diarias o en el examen final, y 3) los dos grupos SALT otra vez recibieron puntuaciones significativamente mejores que el grupo de memorizacion de coro en una repeticion del examen comprensivo final despues de unas vacaciones de verano de tres meses.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(1)

The Brain and Accelerative Learning, Part 1: Perception, Pattern Recognition and the Hypothesis of Formative Causation*

James D. Hand
University of Illinois
College of Medicine at Rockford
and
Barbara L. Stein
North Texas State University

Abstract. The story of the brain and learning is tied inextricably to pattern recognition and perception. Brain functions are triggered by both internally and externally generated stimuli. While little is known about how humans generate the internal stimuli tied to mind and thought, quite a bit is known about perception and pattern recognition. This article covers these latter two topics, as well as Sheldrake's recently published hypothesis of formative causation.

* * *

The story of the brain and learning and, specifically, accelerative learning is tied inextricably to perception and pattern recognition. This is the focus of Part I. Part II will discuss brain functions, and Part III focuses on how people function and implications for educators. (Part II will be published in 11(2) and Part III will be published in 11(3).)

Pribram (1979), Hart (1983), Hyden (1977), and others have indicated that the human brain functions on the basis of pattern recognition, both in terms of gross input recognition through the senses and in terms of internal neural transmission. We identify patterns in the environment and our nerve cells either pass on or block that message to other neurons based on a recognition factor which leads to secretion of excitory or inhibitory chemicals. Through this process, apparently, we learn and remember.

Pattern Recognition

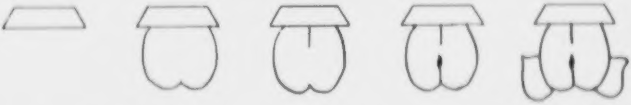
The classroom, very often, is a structured environment in which the teacher tries to help the students learn to identify and understand these patterns. In microbiology, for instance, there is a pattern to the information about which the microbiologists know that helps them remember the information in their field. To students, new to the field, the information is like a maze or a scatterplot of thousands of seemingly unrelated facts and data. The same is true for those first learning a foreign language reading skills or any very new and different subject If the students succeed most often it is because they recognize the pattern that ties all the information together

---

*Paper presented at 1985 SALT Conference in Washington, DC.

As an example of how visual patterns are recognized by the brain cover the drawings below with your hand Move your hand just far enough to the right to reveal the drawings one at a time As each is revealed try to identify what the whole picture will represent

Figure 1



Now if you still do not recognize the picture turn this page upside down The drawing is of an elephant taking a bath seen from the back

Often it seems teachers expect students to know what is being said or understand the instruction within the subject area context when they have had little or no experience with the pattern or context

Hart states There is no evidence that sitting in a classroom hearing a teacher talk for fifty minutes will assure learning Only when the student is ACTIVELY involved will learning occur

As an example of auditory patterns try this next exercise Read each step of the problem aloud and say your answer Do not write down your answers

1 One thousand plus forty equals____________
2 Now add one thousand more This equals____________
3 Add another thirty____________
4 Add another one thousand The total now is____________
5 Add an additional twenty This equals____________
6 Plus another one thousand____________
7 Add another ten to the total The final total is____________

Was your final total 5000? If so you've made the most common error The correct total is 4100 When learners work with spoken numbers they come in with preconceived notions of the patterns they will hear Try this with a group of students or a group of teachers, and watch as the element of surprise catches their attention when the preconceived pattern is broken

Written word problems pose a similar dilemma For example if you take two apples from five apples how many do you have? Analyze this sentence and think about what the words mean Many people answer three If you take two apples from a group of five three are *left* (three remain) You on the other hand have the other *two* in your possession. The answer then is "two." Another question: "A farmer has seventeen turkeys. All but nine die. How many does he have left?" Because of the pattern of words presented (all but nine die, how many are left?) people often given the answer "eight" instead of the correct answer of "nine." The pattern for both these questions involves "what is here and what is not" or "what has gone and what remains?"

Perception

Perception is an ACTIVE process of selection and matching of patterns from external stimuli and from within our highly organized brains, not just a passive reception of the external stimuli. Since learning is based upon perception, it must also be an active process, as described by Hyden (1977). Recognizing what the pattern is *not* is equally important to recognizing what the pattern is. This is one key to answering the questions in the previous paragraph. Language learning through imersion involves repeated word patterns in slightly differing contexts. Learning medicine by seeing patient after patient during clerkships and residency involves repeated patterns of signs, symptoms, test results, therapeutic regimens and results of therapy with slight variations becoming important to determining the most likely diagnosis.

As an example of the complexity of perception we can look at the optic system. The optic nerve originates on the posterior portion of the retina of the eye. The nerve consists of about one million fibers, each originating on one tiny part of the retina. Some fibers relay information about edges, shapes, surfaces and textures while others transmit color information. Each of these fibers of the nerve connect to a specific site on the lateral geniculate nucleus, a plate-like structure about midway back in the neocortex. This means that the retina is mapped onto the lateral geniculate nucleus via the optic nerve. From there, nerves relay the visual information to appropriate sites in the visual cortex, located at the back of the neocortex in the occipital lobe of the brain.

No matter which of the five senses are considered, the brain transmits the information internally to various brain regions by an electrochemical process. A thorough description of this process is provided by Stevens (1979). Pribram (1979) speculated rather accurately that the information is coded by frequency and amplitude of the electrical portion of the message. It is known that highly complex messages can be encoded through waveform interactions which result in what is known as an interference pattern. This is the process by which holographs are produced and by which Hugo Zuccarelli recently produced "holophonic sound." Holophonics purportedly transmit more directly to brain sites than normal sound recordings, by including a referent tone. (See Brain/Mind Bulletin, May 30, 1983)

While individual cells and small groups of cells resonate to their own frequencies and amplitudes, each major portion of the neocortex is generally internally synchronized. Consequently, a person may have an active beta rhythm (13-30+ cycles per second) generated over melodic interpretation centers when listening to an orchestral arrangement while the more relaxed alpha rhythm (8-12 cps) is generated within the verbal centers which are not currently in use. It is entirely possible that the effects of the passive concert phase of accelerative learning promotes faster learning by relaxing major portions of the brain so that those which *are* active encounter little interference from the other portions.

Sheldrake's Hypothesis of Formative Causation

Is it possible that humans are capable of pattern recognition at the subconscious level? The "ah-ha!" phenomenon would suggest that this is true. Most persons will admit to having experienced a situation in which all parts seem to come together and understanding is suddenly accomplished. "Ah-ha!" The light just snapped on. But is it possible to "recognize" patterns and not experience the "ah-ha" phenomenon? If Rupert Sheldrake's theory of formative causation holds true, perhaps it is possible.

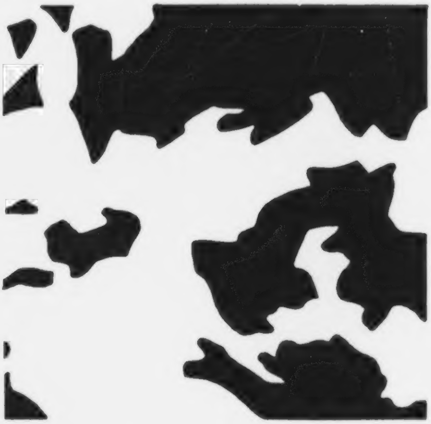
Sheldrake (1981) hypothesizes that information can be passed indirectly between members of a species, even between generations, by a phenomenon termed morphic resonance through morphogenic fields. "Morpho" means form, and "genetic" refers to inherited traits. Therefore, morpho-genetic means inherited form. Sheldrake posits that these fields are neither energy nor mass in nature, but have some as yet undetermined structure and wholeness. Were it not for his strong reputation as a research biologist, Sheldrake's hypothesis may have died aborning from criticism before proof could be generated.

Part of the hypothesis suggests that if a group of individuals in a species learns something, it will be easier for others of the same species to learn it. Sheldrake asked persons interested in researching this to submit proposals to the British journal, *New Scientist* in a 1983 competition. The Tiger Trust (Netherlands) added a European prize of 5,000 guilders, and the Tarrytown Group of New York offered $10,000 for the best proof or disproof of formative causation. Two experiements were chosen for 1983, one with foreign language poems and one with visual images.

In the first study, a leading Japanese poet provided three poems with similar meter and rhyme, one meaningless, one newly composed and meaningful, and one traditional rhyme learned by generations of Japanese children. Persons in several other countries, including the US and Canada were asked to memorize the three poems without knowing which rhyme was which, and report which poems were easiest and most difficult to memorize. Considerably more than half (about 60%) of the participants found the traditional poem easiest to learn. About 30% rated the nonsense poem easiest, while only about 10% found the new, meaningful poem easiest to learn (Brain/Mind Bulletin, September 12, 1983).

The second study (reported in *New Scientist*, Volume 100, p. 1381) used two pictures abstracted in such a way as to hide the image. Sheldrake hypothesized that there would be a tendency for a hidden image to become easier to see if many other people had already seen it. The two pictures were sent to several cohorts in Europe, Africa, and North and South America. Each cohort showed both pictures to a group and gathered baseline data regarding how many people could identify each image during a one-minute viewing. The next week one of the pictures was selected at random and shown to two million viewers of a British television program. The identity of the picture selected was withheld from Sheldrake and the other researchers. The picture was shown in original form, then the hidden image was revealed to the viewers, and finally the image was returned to its original form. Once seen, the hidden image is quite obvious to the viewer. After the British showing, the experimenters tested another group at each site. The televised picture served as the experimental condition and the other picture as the control. The proportion of persons able to identify the test picture around the world after the British had experienced the hidden image increased 76%. The proportion of those identifying the control picture increased only 9%.

Figure 2



Evidence continues to build in support of Sheldrake's hypothesis. If he is correct, it may have an unusual implication for educators. We may find that, when students are learning something new, it makes sense to focus on the more capable learners first, for if they master the new idea it may be easier for the less capable to later master it.

In summary of Part I, perception and pattern recognition (and, possibly, formative causation) play critical roles in learning. The brain is an almost unbelievably complex organ, as described in Part II, which appears to develop understanding from generating internal patterns tied to those perceived from the external world. The internal patterns are programmed by changes in neurons which pass on or interfere with the message transmission between specialized portions of the brain.

* * *   * * *

References

Hart, L. A. (1983). *Human Brain and Human Learning.* New York: Longman Publishing.

Hyden, H. (1977). The differentiation of brain cell protein, learning, and memory. *Biosystems, 8* (4), 213-218.

Pribram, K. (1979). Holographic memory. *Psychology Today, 12* (9), 71-84.

Sheldrake, R. (1981). *A New Science of Life: The Hypothesis of Formative Causation.* Los Angeles: J. P. Tarcher, Inc.

Stevens, C. F. (1979). The neuron. *Scientific American, 241* (3), 55-65.

* * *   * * *   * * *

Le Cerveau et l'Erudition Accelerer. Premiere Partie: Perception, Reconnâitre le modéle et l'Hypotheses de la Causalite Formatrice

L'histoire du cerveau et l'erudition est lier inextricablement au modele et la perception. Les fonctions du cerveau sont declencher par deux stimulants generer interieurement et exterieurement. Tandis que tres peu est connu comment les humains peuve generer ce stimulant interne lier a l'esprit et la pensee, beaucoup plus est connu au sujet de la reconnaisance du modele et la perception. Cet article comprend les deux dernier sujets, deplus l'hypothese publie dernierement par Sheldrake sur la causalite formatrice.

Das Gehirn und Beschleunigendes Lernen. 1. Teil: Wahrnehmung, Musterwiedererkennung, und die Hypothese der formenden Ursächlichkeit

Die Geschichte vom Gehirn und Lernen ist unlösbar mit der Musterwiedererkennung und Wahrnehmung verbunden. Gehirnfunktionen werden sowohl von internen als auch externen Anreizen ausgelöst. Während nur wenig davon bekannt ist, wie Menschen interne Anreize, gebunden an Geist und Gedanken, auslösen, ist jedoch ein gewisses Mass bekannt über Wahrnehmung und Musterwiederderkennung. Dieser Artikel beschäftigt sich sowohl mit diesen letzten zwei Themen als auch mit Sheldrakes kürzlich veröffentlichten Hypothese der formenden Ursächlichkeit.

El Cerebro y Aprendizaje Acelerado. Primera Parte: Percepcion, Reconocimiento de Patrones, y la Hipotesis de Causa Formativa

La historia del cerebro y de aprendizaje esta inseparablemente ligada al reconocimiento de patrones y a percepcion. Funciones cerebrales son provocadas por estimulos generados interiormente y exteriormente. Mientras poco es sabido de como las personas generan estimulos interiores, ligados a la mente y el pensamiento, bastante es sabido sobre percepcion y reconocimiento de patrones. Este articulo trata de estos dos ultimos temas y de la hipotesis de causa formativa, propuesta recientemente por Sheldrake.

J. of the Society for Accelerative Learning and Teaching 1986, 11(1)

Accelerated Learning and Self-Concept in Elementary and Secondary School*

Pedro R. Portes, PhD
School of Education
University of Louisville

and

Carr Foster
Brandeis Elementary School
Jefferson County Public Schools

Abstract. The study examined the potential influence of accelerated learning practices on first and fourth graders self-concept. The effect of the accelerated program was found to interact with students gender and grade level. Younger children in the experimental group had higher self-concept scores than controls. Fourth graders self-concept, however, interacted with gender, suggesting a program advantage for boys. Program effects were also reflected by high school students but not with special education students. Implications of the study are discussed with respect to teacher characteristics and program application issues for future research aims.

* * *

Introduction

Acceleration of learning rate by implementation of specific teaching practices is an area receiving increased attention (Haines, 1982, Johnson, 1982, Stein, Hardy & Totten, 1982). This area has been approached in the preschool intervention literature primarily through compensatory efforts aimed at the disadvantaged (Lazar & Darlington, 1983) and through structured teaching programs in particular content areas such as reading and math. Accelerative methods have been based on Piagetian-inspired models with little success.

Numerous teaching approaches have attempted to accelerate learning ranging from creative problem solving and critical thinking skills to programs for the gifted. Educational psychologists also have often examined the effects of expository teaching to those of guided discovery across a limited number of content areas and grade levels. The use of advance organizers, programmed instruction and educational objectives are some of the areas that have been advanced and evaluated in terms of improving school learning. Many of the above developments have been grounded on different theoretical perspectives on learning, instruction and the human brain.

---

* Paper presented at the 1985 Annual Meeting of the Society for Accelerated Learning and Teaching, Washington, DC.

The purpose of this paper is to inform educators about a relatively new model to the field based on a theory of whole brain learning. Recently, there is growing interest regarding reported significant improvements in learning rate using a new method referred to as accelerated learning. Although most findings are reported in a journal that focuses on studies using this method, both immediate and delayed positive effects have been shown across a number of content areas using accelerated learning techniques. For example, with adults, foreign language vocabulary learned at a rate of 1.2 words per minute while teaching 1,000 words a day with 95 percent recall the next day (Schmidt, 1980). The hypothesized mechanism for such learning rate improvements center around directing the learning process to areas that involve more than the left brain. With the aid of music, relaxation and activities, the processes of encoding, storage and retrieval are believed to be facilitated in the learner since the "whole brain" is believed to be stimulated in the learning process.

Theoretical Rationale

Teaching practices that promote interaction in several areas of the brain are hypothesized to increase dramatically both rates of learning and retention. Lozanov (1978) has developed a method of instruction for this purpose since traditional schooling is thought to ignore the opportunities for acceleration that stem from activating other areas of the brain besides those associated with the left hemisphere. The latter processes information in a linear, sequential fashion that is similar to computers. The right hemisphere helps to visualize the "gestalt" of information, the synthesis of ideas (Eccles, 1977), and to process the emotional components of speech as well as intonation and imagery. In learning, coordination between the two hemispheres facilitates simultaneous processing that is thought to increase long-term retention of information. Since information can be processed either through the verbal system (left brain) or the "imaginal" system (right brain), an additive effect has been posited in the literature when both are involved (Paivio, 1978).

In brief, imagery, music and other prosaic functions of the right brain, along with the visual/auditory linear processing of the left brain facilitate learning in each of the encoding, storage and retrieval phases. Lozanov has also argued that "proper teacher training" that leads to generating and maintaining positive affective learning environments through the use of theory-based techniques increases the receptiveness of students. Direct observations of the accelerated learning (AL) in action reveal that the information, comprehension and concept which are taught to students by this method are presented in a unique fashion. It is not uncommon to find what appear to be, to the untrained observer, a host of irrelevant or dramatized activities in these classes. The teachers trained by this method display a combination of ingenuity and skills in sequencing and elaborating topics, prepared well in advance, to arrive at particular objectives. Students attention and interest are maintained by seemingly unorthodox techniques Teachers attempt to conquer the students minds in open warfare (James 1958) by purposively engaging the student at various levels and sense modalities Frequently such teachers present concepts not only at a verbally-mediated level but also help students process information using imagery Learning also takes place in context with suggestion, relaxation and music paced with varying tempo and sociodrama activities (Moreno 1934) The rationale for using these aids are to help children encode store and retrieve information in a way that is believed to involve the left as well as the right parts of the brain

Besides the hypothesized advantages of simultaneous processing a second important dimension in learning is targeted by AL (Accelerative Learning) methods It is the affective domain Variability in students arousal level and anxiety have been shown to influence the rate of learning in students (Spielberger, 1978) Through the use of relaxation techniques and non-threatening situations students participation is encouraged and frequently reinforced By providing a psychologically safe environment in which students are often rewarded a high success rate for the individual student is maintained Consequently, student's self-concept is hypothesized to be influenced positively by AL Teachers

Specific Aims

The purpose of this study is to test the above hypothesis concerning children's self-concept in the context of an accelerated learning program This is a first step in assessing program impact on students overall performance Of particular interest is the question of whether the method works as effectively for young as for older children This question is of relevance in that there is no information regarding the effects of accelerated learning with different aged children in the literature Findings in this area may be of both theoretical and practical relevance in determining where this approach is most useful In sum, potential effects of treatment will be examined with regard to children's self-concept since accelerative methods involve the affective domain to a considerable extent In fact, it is quite possible that any potential advantage found later in cognitive outcomes for experimentals may be brought about by increased motivation and positive attitudes towards self, others and learning, all of which may depend on affective factors being influenced

Method

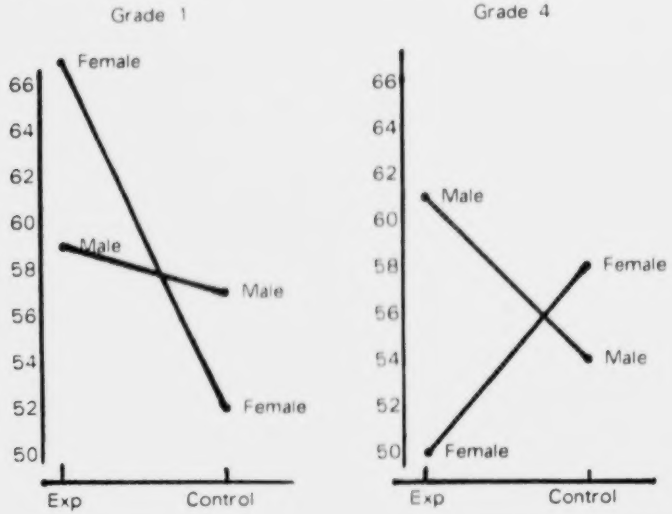
Sixty 1st grade and sixty 4th grade students were randomly assigned at the beginning of the 1984-85 school year to treatment and control conditions at a local elementary school Prior to this time, two teachers at this school were trained in Accelerative Teaching Skills During the first weeks of the fall semester, students were administered the Piers-Harris Self-Concept Scale Pretest scores were also collected for the CTBS at both grade levels In the Spring, the CTBS was again administered along with the P-H Self-Concept

Scale The data was analyzed to examine if the treated groups performed significantly above the control groups in self-concept scores and measures of achievement A second aspect of the study involved examining pre- and posttest differences in subsamples of educationally handicapped children (N=8) high school students (N=33) and middle school students with reading problems (N=39) in grades six, seven and eight All of the above classes included in the study were taught by experienced teachers trained in SALT methods The object thus was to examine the potential effectiveness of the accelerated program across both experimental and control groups for a subsample that was randomly assigned and others at different points during development (using the sample receiving the AL treatment) Sex differences were also controlled in the study to determine potential differences in response to treatment

Results

Posttest scores from the Piers-Harris Self-Concept Scale were analyzed for treatment sex and grade level effects for the randomly assigned subsample of first and fourth graders The results indicated a significant three-way interaction F(1 90)=5 2 $p < 002$ where differences by grade level and sex were found to be important See Figure 1

Figure 1 Three-way interaction by condition grade and sex



At the first grade level, the difference between experimentals and controls was significant as shown in Figure 1, but not at the fourth grade level. However, gender in the first grade interacted with treatment. Girls in the control group had lower self-concept than experimentals. In the fourth grade, experimental girls had a lower self-concept than in the control group, but the boys had higher scores in the experimental group.

In the second part of the study, the educationally mentally handicapped, the middle and high school groups were compared as a whole in terms of pre and post scores. The results showed a significant, positive gain, $t(79)=3.07$, $p<.01$ overall. The largest gains occurred in the high school group, $t(32)=4.3$, $p<.001$. The results did not indicate a significant gain for the EMH and middle school group with reading problems. Table I shows the means and standard deviations for each of the above groups. It should also be noted that pretest scores in the first group were excluded from analyses since that part of the study incorporated a different experimental design.

Table I. Means and Standard Deviations for Pre- and Posttest Self-Concept Scores by Grade

	Pretest		**Posttest**	
	Mean	*SD.*	*Mean*	*SD.*
Elementary School (n=98)				
Grade 1 experimental			64.3	10.8
Grade 1 control			56.3	11.3
Grade 4 experimental			55.7	12.4
Grade 4 control			56.7	11.4
Middle School (n=39)				
Special Reading Class	52.1	8.7	53.3	11.2
Educationally Handicapped (n=8)				
Elementary	56.8	8.8	54.8	8.5
High School (n=33)				
Grade 12	56.3	7.5	61.7	7.2

Discussion

In general, the results suggest that young children's self-concept was improved by participation in the accelerated program and may be more malleable early rather that later in development. Yet, the sex of the child may be an important moderator variable to consider in future studies. As was noted, sex was correlated with treatment at different grade levels. This finding provides a clue in understanding how AL treatment impacted on the present sample. The findings serve primarily to explore a set of interrelated questions by providing initial data points. Were the results confined to the experimental design employed, a plausible hypothesis would appear to be that by the later grades, self-concept is less susceptible to change. It should be noted, however, that the high school data does not support this conclusion. Second, alternative explanations exist. The sex of the teacher or the effectiveness in the implementation of the program could have also influenced the present findings. Additional research in this area is needed to clarify the role of accelerated training programs in the context of potentially contaminating factors.

The next step in considering the influence of accelerated learning in public schools requires attention to academic achievement. The reciprocal influence between it and self-concept is critical to consider. In the next report, we plan to provide data on scholastic performance in context with teacher variables.

* * * * * *

References

Eccles, J. (1977). Evaluation of the brain in relation to the development of the self-conscious mind. *Annuals of the New York Academy of Sciences, 299,* 161-179.

Gagne, R.M. (1970). *The Conditions of Learning.* New York: Holt, Rienehart & Winston.

Haines, P. (1982). Modifying mathematics instruction for gifted students using SALT. *Journal of the Society for Accelerative Learning and Teaching, 7,* 307-324.

Hardy, A. & Mershon, B. (1982). Field-based vs. traditional teacher education: A study of learning style preference. *The Teacher Educator, 16,* 23-26.

James, W. (1958). *Talks with Teachers.* New York: Norton.

Johnson, P.L. (1982). The effect of group relaxation exercises on second and sixth grade children's spelling scores. *Journal of the Society for Accelerative Learning and Teaching, 7,* 239-250.

Lazar, I. & Darlington. (1982). Lasting effects of early education. Monographs for the *Society for Research in Child Development, 47,* (2-3).

Lozanov, G. (1978). *Suggestology and outlines of suggestopedy.* New York: Gordon and Breach.

Nagy, P. & Griffiths, A.K. (1982). Limitations of recent research relating Piaget's theory to adolescent thought. *Review of Educational Research, 52,* 513-556.

Paivio, A. (1975). Imagery and long-term memory. In A. Kennedy & A. Wilkes (Eds.), *Studies in long-term memory.* New York: John Wiley and Sons.

Schmidt, C. (1980). Suggestopedia: The Lozanov method of rapid nonstressful learning. In *Mind: Evolution or revolution?* Del Mar: Holistic Education Network.

Spielberger, C.D. & Gandry, E. (1977). *Anxiety and Educational Achievement.* New York: John Wiley and Sons.

Stein B Hardy C & Totten L (1982) The use of music and imagery to enhance and accelerate information retention *Journal of the Society for Accelerative Learning and Teaching, 7*, 341-353

Walberg H J (1984) Improving the productivity of America's schools *Educational Leadership, 41(8)*, 19-30

* * * * * * * * *

L'Erudition Accelerer et le Concept de Soi-Même dans les Ecoles Secondaire et Elementaire

L'etude a examine l'influence potentiel des pratiques d'erudition sur le concept de soi-meme des ecoliers de premiere annee et quatrieme annee l'effet du programme accelere a revele que les etudiants reagissait a leurs genre et aux niveau de la classe Les enfants plus jeune du groupe experimental avaient de points plus eleves pour le concept de soi-meme que le groupe contrôle Toutefois le concept de soi-meme des ecoliers de la quatrieme annee reagissait avec leur genre qui suggere un avantage pour les garçons Les effets du programme ont ete reflechi par les etudiants des ecoles secondaires, mais non avec les etudiants en educations speciale Les implication de l'etude sont discute en egard des caracteristiques du professeur et les problemes des application du programme pour des buts de recherche de l'avenir

Beschleunigendes Lernen und die Selbsteinschatzung in Grund- und Sekundarschulen

Diese Studie untersuchte den potentiellen Einfluss von beschleunigenden Lernpraktiken auf die Selbsteinschatzung von Erst- und Viertklasslern Der Einfluss des beschleunigenden Programms erwies sich als analog zu Geschlecht und Altersstufe Jüngere Kinder in der Experimentgruppe hatten eine höhere Selbsteinschätzung als die in der Kontrollgruppe Zwischen der Selbsteinschätzung von Viertklässlern und ihrem Geschlecht bestand eine Wechselbeziehung, derzufolge Jungen vom Programm einen grösseren Vorteil zogen Programmauswirkungen erwiesen sich auch bei Sekundarschulern, nicht aber bei Sonderschulern Folgerungen dieser Studie werden diskutiert bezüglich Lehrercharakteristiken und Programmanwendungsfragen für zukünftige Forschungszwecke

Aprendizaje Acelerado y Concepto de Si en la Escuela Primaria y Secundaria

El estudio examino la posible influencia de practicas de aprendizaje acelerado en el concepto que alumnos de primero y cuarto grado tienen de si mismos Se encontro que el efecto del programa acelerado obro reciprocamente con sexo y grado de los estudiantes Los participes mas jovenes en el grupo experimental obtuvieron puntuaciones mas altas que los del grupo control en una medida de concepto de si El concepto de si de los alumnos de cuarto grado, sin embargo, obro reciprocamente con sexo, sugiriendo que los niños en

el programa tenian una ventaja sobre las niñas Tambien se encontraron efectos del programa en estudiantes de bachillerato pero no en estudiantes de educacion especial La trascendencia de este estudio se discute con respecto a caracteristicas del profesorado y cuestiones de aplicacion del programa en investigaciones futuras

J of the Society for Accelerative Learning and Teaching. 1986, 11(1)

A SALT Remedial Reading Class: An Experimental Update

Allyn Prichard
Kennesaw College
and
Jean Taylor
Huntley Hills Elementary School

Abstract. Fifty-two student Participants in the SALT remedial reading program at Huntley Hills Elementary School averaged 3.86 months gain per month of instruction on the Stanford Diagnostic Reading Test, a slight decrease in performance over past years. Possible explanations are posed.

* * *

Introduction

The 1980-81 accelerated learning reading experiment at Huntley Hills Elementary School (DeKalb County, GA school district) moved steadily along a path whose direction was established in 1974. Students improved their reading skills through a cycle of activities that has become a powerful, effective suggestion ritual built around a framework of phonics games, the Fernald kinesthetic approach, music, relaxation, visualization, and drama. These were combined to produce a student average gain score of 3.86 months per month of instruction.

It was, however, not a typical year in matters other than repetition of the now well-established experimental treatment and achievement of solid gain scores. Central office policy changes required the SALT classroom teacher, Jean Taylor, to teach all students on alternate days for the entire school year, rather than scheduling half of them every day for one semester, as her previous procedure had been. A different program evaluation instrument was also introduced.

Too, Ms Taylor paid particular attention to student feedback regarding the appropriateness of certain types of visualization exercises, music selections, and drama activities. And last, it became more evident, as evidence continued to accumulate, that the accelerated learning cycle reported here is more appropriate for upper (fourth grade and above) elementary school students than it is for second and third graders.

Method

Subjects

Huntley Hills Elementary School is located outside the city limits of Atlanta but within the circular perimeter freeway separating those people who live "in town" from those who live "in the suburbs." The Huntley Hills student body is characterized by considerable racial variety: mostly white, but with a generous mix of blacks, hispanics, and orientals, all coming mostly from a working class economic background. Neither the problems of inner city poverty nor the supposed benefits of suburban affluence pervade student life. To the extent that Huntley Hills represents a cross section of cultural though not economic backgrounds, it is a reasonably typical American public school.

Students selected for this reading program were those whose scores on the Stanford Developmental Reading Test indicated performance 5 months or more below grade level for second graders, 7 months or more behind for third graders, and a year or more behind for students in grades four through seven.

Materials

The lesson material employed in this SALT cycle was the Barnell Loft series *Getting the Facts*, booklets A through F. This material is particularly appropriate for the following reasons:

1. It readily lends itself to dramatization, containing descriptions of the life situations with whom students can easily identify.
2. Booklets A through F are written on reading difficulty levels appropriate for grades one through six respectively. Thus one may be reasonably confident in matching pretest results with this material.
3. Since there are no picture context clues provided, students may use the imagery skills developed in SALT to create their own visual interpretation of each story line.

Method

The two-day SALT cycle consisted of two 45 minute class sessions (scheduled on alternate days) devoted to the same lesson. Students thus received instruction on five days out of every ten: half of them on a M-W-F-Tu-Th schedule, the other half on the remaining days. The first day of the cycle emulated the activities in a Lozanov foreign language class to a high degree, including 1) presentation of new material (here, vocabulary words), 2) review of the material in a relaxed state, and 3) practice (dramatization) in a spontaneous, fun atmosphere. The second day included a sequence of activities differing considerably from the second day of Lozanov's foreign language suggestopedic cycle (all drama and small group practice), but which has proved to be effective in both maintaining student enthusiasm and helping produce high gain scores as well.

The cycle operated as follows

DAY 1

Phonics Games

Commercial produced phonics games are played as a warmup activity, all designed to promote acquisition of basic phonics skills. These games (without workbooks or drill) are an important motivation and contribute to a learning-can-be-fun atmosphere.

Presentation of New Vocabulary

New vocabulary is introduced through an approach combining the contextual and kinesthetic methods. Each vocabulary word selected for emphasis is paired on paper with a sentence in which it is used. For example:

What_______________is the dog doing?

Students trace over the new word, write it in the blank in the sentence, and take turns reading their sentences to the other class members. Sentences consist of minor wording and structural changes from the story lesson material to be read the following day. An average of eight vocabulary words (including some sight words) are selected for emphasis in this manner.

Relaxation Review with Music

1. Students lie down on rugs, close their eyes, and relax.
2. Visualization suggestions lasting three to four minutes are given by the teacher, taking the class on a fantasy trip designed to calm their minds and to stimulate imagery flow. Several themes are alternated from day to day to help prevent boredom.
3. Suggestions are given emphasizing the worthiness and uniqueness of each student. Further suggestions describe the "mental screen" upon which each student will form images related to the vocabulary material.
4. The teacher reads the vocabulary material over a musical background (baroque, 4/4 time) in the following manner: pronounce vocabulary word, pause, spell the word, pause, use the word in a sentence. Three intonations are rotated for each new word-spelling-sentence triad: normal (declarative), whisper (quiet, ambiguous), and loud (commanding). Students are encouraged to let their breathing follow the rhythm of the music and to visualize the spelling of the word and the action described by the sentence in which the word is used.
5. After a short pause to allow the lesson material to "sink in," suggestions for general health and academic excellence are given.
6. The teacher returns the class members to their alert, waking state by counting forward from one to five.

Dramatization

A play is enacted, providing oral reading practice of material containing the vocabulary words just introduced. The play, written by the teacher, is adapted from story material to be read for comprehension testing purposes the next day.

Review

The day's vocabulary words are read aloud in turn by the students to further fix the words in their minds just before they leave class.

DAY 2

Phonics Games

as during Day 1

Review

Oral reading of the vocabulary list previously introduced.

Presentation of Story Material Over a Musical Background

1. Students lie down, relax, and allow their breathing to synchronize itself with the music, as before.
2. Mind-calming exercises are given, as before.
3. Presentation of new material: the teacher reads a page directly from the Barnell Loft story booklet over a musical background. Her delivery is emotional and dramatic, deliberately creating a special theatrical rendition. Students are not expected to remember the details of the story; instead they simply relax, enjoy the music, and open themselves up to the imagery stimulated by the dramatic reading and the music.
4. Pause for "sinking in" time, as before.
5. Students return to their wide awake state, as before.

Oral Reading of Story Material

Students read the story aloud from their lesson booklet while the teacher corrects any pronunciation errors.

Comprehension Check

Students answer questions provided in the Barnell Loft material.

Analysis of the SALT Cycle

Aside from the suggestive aspects of this cycle, it is important for the reader to realize how these activities intertwine in order to make success highly likely when the "bottom line" step is undertaken: reading the lesson aloud and answering questions over its content.

Note that during Day 1, new vocabulary is introduced with the aid of context clues, reviewed in a relaxed mental state, elaborated upon (read aloud) in a dramatized setting, and reviewed again in a brief final activity. During Day 2, the teacher reads the story aloud, providing another visualization opportunity and a preview of what the student is to read aloud and be tested over.

By the time the student is called upon to read for himself and answer questions over the material he has undergone a great deal of preparatory activity including all of the skills fundamental to reading phonics sight words use of context clues and structural analysis (incidentally) in the correction of any errors that occur during oral reading In addition the student has associated visual imagery with both the vocabulary words and the story as a whole

Given this organization of experiences comprehension has greatly improved even for the severely disadvantaged readers in this program

Results

Year end pretest-posttest gain scores on the Stanford Diagnostic Reading Inventory were computed for the 52 student participants Those scores are summarized below

Table 1 Stanford Diagnostic Reading Inventory Average Gain Score

Grade	No of Students	Gain in Months
2	12	5 67
3	11	10 81
4	11	15 64
5	7	16 29
6	4	23 75
7	7	27 14
	52	14 65

Note that each student participated in an 80-day instructional program His classes met every other day after the beginning-of-year two-week testing and staffing period was completed and before the end-of-year testing Thus students received the equivalent of four months of instruction although it was spread over 160 school days Based on a four-month instructional period the average gain score for all grades two through seven was 3 86 months gain per month of instruction The average for grades four through seven was 4 83 months gain per month of instruction

Discussion

The 3 86 months gain per month of instruction for the overall program was slightly less than the 4 0 gain/month standard which has been typical over the past years This may be a statistical fluke On the other hand it may be related to the issue of massed vs distributed practice (previous programs ran every day during one semester), or to the fact that a new evaluation instrument, the Stanford Developmental Reading Inventory was used in place of the Spache Diagnostic Reading Test Unfortunately it was not possible to obtain a district-wide average of remedial reading gain scores. Thus, comparison of these experimental results with other Dekalb County remedial reading gain scores was impossible, as it was also impossible to determine whether the new test proved to be more difficult for students throughout the district. However it does seem reasonable to assume that 3.86 months gain/month is a result that will compare favorably to most programs.

The fact that upper elementary children scored much better than second and third graders constitutes a recurring theme, one that has been sounded in this program before. It appears that this SALT cycle is more effective for elder elementary schoolers, and that considerable research could yet be done toward identifying those suggestion techniques which are more appropriate for the early elementary grades.

This year proved to be unusually fertile in terms of helpful student feedback. Older children (grades 4 and above) with near normal IQs preferred plenty of variety in music, dramas, and visualization exercises. They were quite willing to indicate exactly what they liked, and greatly enjoyed selecting the music and the mind-calming exercise for the day. As a result, six new visualization exercises were written by Ms. Taylor and incorporated into the cycle. Younger and/or lower IQ students were much more content to accept the schedule as planned. In fact, they slipped easily into relaxation at the beginning of a musical selection, almost regardless of the mind-calming exercises being used that day. This anecdote seems supportive of Lozanov's warning that boredom can allow the intuitive anti-suggestive barrier to slip back into place.

On the whole it was another good year, with considerable effort expended toward adjusting to new administrative requirements and in preparing more mind-calming exercises.

*** ***

References

Bancroft, W. J. (1979). Sophrology and suggestology/suggestopedia: The same system with a different name? *Journal of Suggestive-Accelerative Learning and Teaching, 4*(2), 78-86.

Bancroft, W. J. (1983). Yoga factors in accelerative learning. *Journal of the Society for Accelerative Learning and Teaching, 7*(1), 3-18.

Caskey, O. (1980). *Suggestive-Accelerative Learning and Teaching.* Englewood Cliffs, NJ: Educational Technology Pub.

Caskey, O. & Oxford, P. A. (1981). Mental imagery in early cognitive development. *Journal of the Society for Accelerative Learning and Teaching, 6*(3), 196-205.

Lozanov, G. (1978). *Suggestology and Outlines of Suggestopedy.* New York: Gordon & Breach.

Prichard, A. & Taylor, J. (1976). Adapting the Lozanov method for remedial reading instruction. *Journal of Suggestive-Accelerative Learning and Teaching, 1*(2), 107-115.

Prichard, A. & Taylor, J. (1978). Suggestopedia for the disadvantaged reader. *Academic Therapy, 14*(1), 81-90.

Prichard, A. & Taylor, J. (1980). *Accelerating Learning*. Novato, CA: Academic Therapy Publications.

Prichard, A., Schuster, D. H., & Gensch, J. (1980). Applying SALT to fifth grade reading instruction. *Journal of the Society for Accelerative Learning and Teaching, 5*(1), 52-58.

Schuster, D. H., Prichard, A., & McCullough, J. (1981). Applying SALT to elementary school spelling instruction. *Journal of the Society for Accelerative Learning and Teaching, 6*(3), 189-195.

Schuster, D. H. & Gritton, C. E. (1986). *SALT: Suggestive Accelerative Learning Techniques: Theory and Applications*. New York: Gordon & Breach.

*** *** ***

Une Classe sur la Lecture de Rattrapage SALT: Un experiment mener a data

Cinquante-Deux etudiants participant au programme de lectures de rattrapage SALT a l'ecole elementaire Huntley Hills ont obtenu une moyenne de 3.86 de gain par mois d'instruction sur l'examen de lecture diagnostique Stanford, a travers les annees passe. De possibles explications ce poses.

Eine SALT Nachhilfeklasse im Lesen: ein Versuchszwischenbericht

52 teilnehmende Schüler im SALT Nachhilfeprogramm im Lesen an der Huntley Hills Grundschule zeigten eine durchschnittlichen monatlichen Zuwachs von 3.86 pro Monat des Unterrichts auf dem Stanford Diagnostic Reading Test. Dies stellt einen leichten Rückgang gegenüber Ergebnissen vergangener Jahre dar. Mögliche Erklärungen hierfür werden angeboten.

Una Clase SALT Remediadora de Lectura: Una Evaluacion Experimental al Dia

Cincuenta y dos estudiantes participes en el programa SALT remediador de lectura en la escuela primaria de Huntley Hills mediaron 3.86 meses de mejora por un mes de instruccion en el Standford Diagnostic Reading Test, una pequena disminucion en rendimiento comparado con años pasados. Se presentan posibles explicaciones.

J. of the Society for Accelerative Learning and Teaching 1986, 11(1)

Three Different Versions of the Concert Session in Suggestopedic Language Classes in France, East Germany and the United States

Lynne Strudel

University of Paris XI

Abstract. This article describes specific differences in the practical organization of the concert ritual in suggestopedic foreign language classes in three different countries: France, East Germany and the United States. The procedures of one institute from each country are described, including the order of events, the presence or absence of special relaxation exercises, the music selections, the "concert state" and how the students emerge from it.

* * *

From one country to another, there appears to be a great deal of variety in suggestopedic foreign language classes, although all of them are based on the work of Georgi Lozanov in Bulgaria. So far I have not come across any clear description of these differences, but I believe such a description could be useful. This paper will therefore attempt to describe step-by step differences in one aspect of these classes: the concert session. Procedures in three different institutes will be studied, each institute being fairly representative of suggestopedia as practiced in that country. The institutes studied here will be (1) the Ecole Française de Suggestopedie in France, directed by Fanny Saferis, (2) the Forschungsstelle für Mnemologie in Leipzig, East Germany, under the direction of Klaus Janicke and Dieter Lehmann, and (3) the LIND Institute in San Francisco, led by Charles Schmid. In all three cases the learners are adults.

France

The Ecole Française de Suggestopedie is the best known center for suggestopedia in France and has greatly influenced its development in this country. Most other suggestopedic teachers in France have at least passed through its doors, if they have not actually taken a class or a training session there. Of the three schools under consideration here, procedures at the French school seem to bear the most resemblance to recent procedures at the Institute of Suggestology in Sofia as described by Lerede (1980).

Classes meet three and a half hours a day, five days a week, for five weeks, and there is a concert at the end of almost every class session. This separation of the two concerts, the active concert at the time a new lesson is presented and the passive one at the end of the following day, is the only major departure from the usual order of events in a suggestopedic class (Lozanov, 1978; Cooter, 1980).

The music used is almost exactly the same as the music which has been used in Sofia since 1975, i.e., different works of Haydn, Mozart, Beethoven, Tchaikovsky, Brahms and Chopin for the active concert, and Corelli, Bach, Handel, Couperin, Rameau and Vivaldi for the passive one (cf Lozanov, 1978). There has been some experimentation with music corresponding to the country of the language being studied, for example, Rodrigo's "Concerto de Aranjuez" for one of the active concerts in a Spanish class, but further research remains to be done on this. For both concerts whole musical compositions with all the movements included are used, rather than a series of largos as described by Ostrander and Schroeder (1979).

In preparation for the first, or active concert, the teacher whets the appetites of the students by a brief and vivid description of the action in the new lesson, before handing out the text of the dialogue with the translation in the students' mother tongue on the right half of each page. There is no other preparation in the form of relaxation exercises or special breathing. The students sit upright with their eyes open and follow the text and translation as the teacher reads the foreign language only over the music. This is a very slow, solemn emotionalized, dramatic reading with long pauses, but the voice follows the musical phrasing rather than the sense of the text, and there is no special rhythm to the reading and pausing; the voice is like one more instrument in the orchestra. There are no three-tiered intonations during the concert, although intonations are occasionally used later during the elaboration phase.

For the second, passive concert the next day, students recline their deck chairs and close their eyes to listen to baroque music and the same text read at normal speed. Here, of course, it is harder to concentrate, and sometimes students drift off, particularly towards the end of the concert. When the reading is finished, the music continues for another minute or so. Then the teacher disappears rapidly, leaving the students to emerge as they like from their deeply relaxed "concert state."

East Germany

The Forschungsstelle für Mnemologie in Leipzig is probably the best-known center for research in suggestopedia in the eastern bloc countries, outside of the Soviet Union and Bulgaria. It regularly publishes "Wissenschaftliche Berichte" which is somewhat similar to the SALT journal, except that contributions usually come from within the institute. The center seems to have about as much classroom space and as many teachers as the French school described above, but in addition to the teaching staff, there is a medical doctor on the team, Dr. Vörkel, who has at his disposition an impressive collection of instruments for measuring physiological response, such as brain waves (the electroencephalogram), heartbeat, breathing frequency, electrical changes in the skin, eyelid movement and even movements of the jaw muscles. These measurements are not made in the middle of a real class, however, but in a special laboratory next to the classroom,

49

outside of class time and on an individual basis. (There is only room for one person in the specially equipped chair.) The concert session is then simulated in the laboratory.

Unlike the French school, which has no direct university connections, this research center is part of the University of Leipzig, and the German students must take regular written university exams at the end of the course. This probably explains the more traditional atmosphere of the classes (there is no question of using first names or throwing balls in class here) and the large table in the middle of the classroom. Perhaps this table does make writing easier, but it certainly limits physical movement and game playing. Most of the students are about to be sent abroad and seem to be available on a full-time basis for intensive language learning, but it is felt that more than four hours of classes a day would be exhausting and would do more harm than good.

The concert sessions take place, one right after the other, in a separate room with deep leather armchairs. Instead of whole works, the students hear a series of slow movements from instrumental works of Gluch, Tartini, Corelli, Telemann, Bach, Boccherini, Handel, Vivaldi. The same tape is used for every lesson and for every language. As in the French school, the students read the text and translation as they listen to the teacher's voice and the music during the active concert, but close their eyes for the passive concert. However, in this center during the active concert, the teacher's intonation changes with every sentence: loud and authoritative, then whispering, then normal.

The main innovation in Leipzig is the addition of special wake-up music ("Abspannmusik") at the end of the concert session in order to bring the students back to their normal state before letting them out on the streets. For this purpose vigorous movements from the works of Haydn, Benda and Richter are used. Let it be said in passing that this is a customary procedure in music therapy: the patient is always brought back to a normal wakeful state by appropriate music after a deep relaxation session (Guilhot, Jost and Lecourt, 1979).

America

Charles Schmid of the LIND (Learing In New Dimensions) Institute in San Francisco and the teachers he has trained would appear to have gone the furthest from a traditional classroom approach of any of the three schools under study here, and perhaps they are the furthest from the Bulgarian model as well. For one thing classes no longer take place at the institute itself but are organized by LIND-trained teachers in their respective communities. Thus there is considerable variety from one class to another, both in teaching styles and in scheduling. True intensive classes as described above, seem difficult to organize in America outside of a company language learning program. Most LIND classes meet only two or three times a week for three and a half hours in the evening; some meet only once a week.

At first glance the concert ritual seems to resemble that of the French school described above, i.e., the concert itself is preceded by a ten-minute introductory sketch or decoding phase; during the first concert, the teacher's voice follows the volume and cadences of the music, which consists of the works of Haydn, Mozart, Beethoven, Brahms and Tchaikowsky, while the students read the text and translation. There is a great difference between the second concerts of the two schools, in that only the slow movements are used at the Lind Institute. Typical composers are Pachelbel, Vivaldi, Corelli, Bach and Albinoni.

However, to Lozanov's learning cycle, Charles Schmid has added the use of neuro-linguistic programming, Total Physical Response exercises inspired by the work of Asher (1982), and above all, imaging exercises, such as those described by Ostrander and Schroeder (1979) or by Schuster (1976). These are usually done at the end of the activation phase. He has also added relaxation exercises to the music of Steve Halpern and David Kobialka, among others, done mostly during the first week of classes and just before the concert session. It is mainly this use of visualization and relaxation which seems to distinguish the American form of suggestopedia from the European form.

At least one of the LIND teachers has modified the concert ritual still further, in that the actual concerts are preceded by as much as half an hour of mental imagery, done in the mother tongue for the first half of the beginning course and in the target language for the second half of the course. Throughout the time of the mental imagery plus first and second concerts, the students lie on the floor or on couches, if these are available, *with their eyes closed*. It is thus impossible to read along with the teacher or to read the translation at the same time, and of course, since the material being presented is all new, it is highly unlikely that anybody will understand much of it. This is done purposely in order to bypass the verbal dominant hemisphere of the brain as much as possible and to stimulate the aesthetically-minded non-dominant hemisphere. Anxiety at not understanding the target language text has been reduced or eliminated by the guided imagery which preceded the concert, and afterwards the students will receive cassette-recordings of the second concert to take home with them as well as the written text plus translation. Then they will have a week on their own to listen to the cassette and understand the text before putting their new knowledge to work during the activation phase of the next class session.

It is interesting to note that falling asleep during the concert session does not prevent the material from being absorbed, according to this teacher. However, being absent and missing the concert session altogether does make the student weak in that lesson, despite work at home with the cassette and text.

Charles Schmid asks the students not to talk for at least eight minutes at the end of the second concert reading while the music continues to play. Any student who must leave immediately is asked to remain in silence for a while, even outside the classroom. While not all of the other LIND teachers use the period of silence, they use no particular technique to bring the students back to their normal state either, as the students find the "concert state" very pleasant and wish to remain in it as long as possible.

Conclusion

The concert session may not be the most important but it certainly is the most striking characteristic of a suggestopedic class. Other aspects differ little (outwardly, at least) from other modern, active methods using humanistic techniques promoting affective involvement such as described by Moskowitz (1978). If the concert is an important element in accelerating learning (Stein et al. 1982), the question inevitably arises: which sort of concert ritual is most effective for language learning? It would be interesting to compare linguistic results by giving the same test to beginners from the three different centers after 75 hours of classes, but perhaps the data thus obtained would not be useful, as some procedures are more acceptable in one culture than in another. A technique which may be effective in Berkeley might be regarded as "mystic" by the rational French and totally unthinkable by the scholarly East Germans.

In any case all three of the institutes studied here use the concert session to address the right, non-dominant hemisphere of the brain and to induce a particular, slowed-down, relaxed state, favorable for the acquisition of considerable quantities of new material. (See Cooter, 1980, for explanations as to why this works.)

All three use suggestion, directly or indirectly, to accelerate learning, and these different versions of the concert session all seem to have therapeutic effects, in addition to promoting the learning of a foreign language.

From what can be gathered from reading different descriptions of Lozanov's work (Bancroft, 1976; Saferis, 1978; Lerede, 1980), as well as from reading his thesis itself, translated, brought up to date and published in English in 1978, it is clear that constant experimentation is taking place in his institute in Sofia. The procedures observed in Leipzig and described in this paper would seem to correspond to what Lozanov was doing about ten years ago, and the procedures in the Paris school seem to correspond to a more recent phase of his work. The LIND institute is up to date on Lozanov's latest research, but Charles Schmid seems to have gone beyond the Bulgarian's recommendations.

Is this an improvement over Lozanov's work? In their very interesting and well-documented study on music and imagery (1982), Stein, Hardy and Totten found that "using multiple channels of input (i.e. adding imagery) may increase long-term retention of the words even when it appears to have little effect on the short-term retention.

This is intriguing but not entirely convincing Further research along these lines seems to be necessary in order to determine the effectiveness of the new elements

*** ***

References

Asher J (1982) *Learning Another Language Through Actions* Los Gatos California Sky Oak Productions

Bancroft J (1976) The Lozanov Language Class *Journal of Suggestive-Accelerative Learning and Teaching, 1,* 48-81

Cooter S (1980) Brain lateralization and Lozanov concerts *Journal of Suggestive-Accelerative Learning and Teaching, 5,* 254-260

Guilhot J & M.A. Jost J Lecourt E (1979) *La musicotherapie et les methodes nouvelles d'associatin des techniques* Paris Ed sociales fran ainses

Lerede J (1980) *Suggerer pour apprendre* Les presses de l'Universite de Quebec

Lozanov G (1978) *Suggestology and Outlines of Suggestopedy.* New York Gordon and Breach

Moskowitz G (1978) *Caring and Sharing in the Foreign Language Class.* Rowley Massachusetts Newbury House

Ostrander S & Schroeder L (1979) *Superlearning.* New York Delacorte Press

Saferis F (1978) *Une Revolution Dans L'Art D'Apprendre.* Paris Robert Laffont

Schuster D Bordon R & Gritton C (1976) *Suggestive, Accelerative Learning and Teaching: A Manual of Classroom Procedures Based on the Lozanov Method.* Ames Iowa Society for Suggestive-Accelerative Learning and Teaching

Stein B Hardy D & Totten H (1982) The use of music and imagery to enhance and accelerate information retention *Journal of the Society for Accelerative Learning and Teaching, 7,* 341-356

*** *** ***

Trois interpretations Differentes de la Session du Concert en Classe Suggestopedique de Langue en France en Allemagne de l'Est et aux Etats-Unis

Cet article decrit des differences precise dans l'organisation pratique du rituel de concert en classe suggestopedique de langue etrangere en trois pays differents la France l'Allemagne de l'Est et les Etats-Unis Dans chaque pays les procedures d'un institut sont decrites y compris la suite des evenements la presence ou l'absence des exercices de relaxation la selection de musique l'etat concert et comment les etudiants en ressortent

Drei verschiedene Versionen der Konzertphase im suggestopadischen Fremdsprachenunterricht in Frankreich Ostdeutschland und den Vereinigten Staaten

Dieser Artikel beschreibt wesentliche Unterschiede in der praktischen Organisation der Konzertphase im suggestopädischen Fremdsprachenunterricht in drei verschiedenen Ländern: Frankreich, Ostdeutschland, U.S.A. Die Ablaufe in jeweils einem Institut dieser Länder wird beschrieben, einschliesslich der Folge der Handlungen, der Gegenwart oder Abwesenheit von besonderen Entspannungsübungen, der Musikauswahl des Konzertzustandes und wie die Studenten daraus zurückkehrten

Tres Versiones Diferentes de la Sesion Concierto en Clases Sugestopedicas de Idiomas en Francia, Alemania Oriental y los Estados Unidos

Este articulo describe diferencias especificas en la organizacion practica del rito concierto en clases sugestopedicas de idiomas en tres paises diferentes Francia, Alemania Oriental y los Estados Unidos. Se describen los procedimientos de un instituto de cada pais, incluyendo el orden de los acontecimientos, la presencia o ausencia de ejercicios especiales de relajacion, las selecciones musicales, el estado concierto, y como los estudiantes salen de el

J. of the Society for Accelerative Learning and Teaching, 1986, 11(1)

Book review

The Japanese Brain, Uniqueness and Universality

by Tadanobu Tsunoda
Tokyo: Taishukan Publishing Company, 1985
149 pp. 1200 yens

Reviewed by
Gabriel Racle

In the winter 1980 issue of the Journal of the Society for Accelerative Learning and Teaching (Civilizations of the left cerebral hemisphere? 267-274) we introduced Tsunoda's research on the Japanese brain mechanisms. Since that time, other articles have appeared, but the main source of information, *Nihonjin no no*, Taishukan, 1978, was still restricted to Japanese readers and some few foreigners able to understand this language.

This is why *The Japanese Brain* is very welcome. In Japan, *Nihojun no no* was a scholarly best-seller, and has attracted the attention of physicians, psychologists, language specialists, sociologists, artists, musicologists, writers, actors, etc. The little English book is a condensed version of the Japanese original, translated by Yo-shinori Oiwa. But, new data, presented last year in Japan in a second book are included in the second part entitled "A microcosmos in the brain".

The first part, "Brain function and culture" is concerned with Tsunoda's method of research and his most important findings. The key tapping method developed by Tsunoda (adopting the key tapping system presented by R.A. Chase, Comparison of the effect of delayed auditory feedback speech and key tapping, *Science*, 129, 1959) is totally different from existing brain techniques in our Western countries. The subject "listens to a synchronous or simultaneous feedback of his tapping rhythm with one ear (e.g., left). During this process, a delayed feedback of the same rhythm is suddenly presented to the other ear (right). At the beginning, the subject does not pay attention to it, but the intensity of this delayed feedback is increased gradually, and a disorderly tapping rhythm appears, a DAF (delayed auditory feedback) effect. In the second step, the side is reversed. It is then possible to make a comparison between the resistance value of the right and the left ear, and to establish the dominant cerebral hemisphere (I am simplifying a sophisticated system to give an idea on Tsunoda's approach; for more details, please read the book).

By this way, Tsunoda was able to determine that the Japanese left hemisphere processes not only words, numbers or logic, but also human emotional sounds, animal sounds, the sounds of nature, and the sounds of Japanese musical instruments" (p. 81) (see our article for a more detailed explanation). Other techniques have confirmed the validity of Tsunoda's results, i.e., the Wada technique (an anaesthetic is injected into one hemisphere causing a temporary paralysis), brain wave topography (the front page shows color topographical brain dominance patterns which are very eloquent)

The key tapping method is so precise that Tsunoda has been able to explore tones ranging from 20 to 100 Hz The lowest frequency in the human voice is considered to be 100 Hz Since these sounds (below 100 Hz) are not used in verbal communication, the tests results should indicate the functions of the more biological or primitive and therefore more fundamental, part of human brain (p 7) Totally new findings have been discovered The results indicate an inversion of predominant laterality between 20-100 Hz (right ear advantage and left hemisphere) and 100-200 Hz (left ear advantage and right hemisphere) with strange exceptions a sound of 40 60 Hz or multiples of these frequencies induces a shift from one hemisphere to the other These peculiar brain responses are common to all people, irrespective of nationalities or spoken languages But, what is the meaning of this phenomenon? It is still unclear

Also the existence of an accurate system capable of detecting the length of one second in the brain must be assumed (p 120) The 40 60 phenomenon can also be detected with visual stimuli i.e., with 40 or 60 go stones The brain responds specially to the numbers 40 and 60 and also their multiples (p 123) Annual rings of trees are very well known But what about an annual ring system in the brain? This system has been discovered by Tsunoda a shift of hemispheric dominance at the frequency equal to the subject's age or its multiples. This system has an exact correlation with the revolution of the earth around the sun and is common to all human people, making the human race a cosmic child inseparable from the motion of the cosmos (p 130)

Tsunoda was also able to detect an influence of the moon on brain activity as well as some irregularities caused by a variation in the magnetic field of the earth Everybody has an innate switching mechanism organized to process the mother tongue between six to eight two types of mechanisms have been discovered one for Japanese and Polynesian languages and another one for the other languages This mechanism functioning at the subcortical level can detect the slightest difference in input sounds, whether in a high- or low-frequency range This mechanism is also closely related to the earth's revolution the lunar motion and possibly other cosmic activities (p 139)

From that point of view I see a close connection with Dr Guille's research presented in his book *L'Alchimie de la vie,* Monaco Editions du Rocher 1983 Guille Professor at Paris-Sud University arrives at the same conclusion using a completely different approach based on vibratory energies Unfortunately, his book *The Alchemy of the Life* has not yet been translated into English

Dr Tsunoda, who is currently Professor at the Department of Auditory Disorders at the Medical Research Institute of Tokyo Medical and Dental University pursues his exciting research. He certainly has other surprises in reserve. In any case, his present book is very intriguing, stimulating and fascinating. Thank you Dr Tsunoda.

CONSTITUTION FOR THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Article I - Name

The name of this organization shall be the Society for Accelerative Learning and Teaching.

Article II - Purpose

The purpose of this organization is to encourage experimentation and research with methods of accelerating learning, to collect and disseminate information about such methods, and to contribute in all ways possible to the promotion of advancement and excellence in teaching and learning.

Article III - Membership

Membership is available to any individual and membership categories shall be established by the Board of Directors. Organizational membership is also available to related interest-based local, state, national, or international organizations which adhere to the purpose of the Society for Accelerative Learning and Teaching.

Article IV - Board of Directors

The Board of Directors shall consist of the officers of the organization, the immediate past president, and the editors of the *Journal of the Society for Accelerative Learning and Teaching* and of the *Newsletter* of the organization. The Executive Secretary and the Executive Director, positions appointed by the Board of Directors, shall serve as *ex-officio* members.

Article V - Officers

The officers shall be a President, President-Elect, Vice-President, Secretary, and Treasurer.

Article VI - Meetings

There shall be at least one meeting of the organization each year to be held at the time of the annual conference.

Article VII - Amendments

Amendments to this Constitution may be made by a two-thirds vote of the membership with voting to be conducted at the annual meeting where proxy votes shall also be accepted. Absentee ballots shall be distributed to the membership together with notification of amendments prior to the meeting for those who will not be able to be in attendance and choose to vote in that way.

Prior notice of amendments shall be made at least two weeks in advance of this meeting either by mail or through the *Journal* or *NEWSLETTER*.

BY-LAWS OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

- I Membership
  - A The categories of membership shall be
    - 1 Regular membership.
    - 2 Student membership, available to any graduate or undergraduate student at a certified institution either in the U.S.A. or abroad.
    - 3 Special membership available to unemployed or retired persons.
    - 4 Family membership for two persons with the status of a family and living at the same address.
    - 5 Patron membership.
    - 6 Life membership.
    - 7 Organizational membership
      - a Organizational membership shall be available to related interest-based, local, state, national or international organizations which adhere to the purpose of the society.
      - b The two categories of organizational membership are
        - 1 Affiliate membership available to national and international organizations,
        - 2 and chapter membership available to interest-based, local and state organizations.
      - c Organizations wishing to become organizational members of the Society shall present a request for such status in writing together with a copy of the organization's constitution and by-laws to the President of the Society, and it shall be voted upon by the Board of Directors.
      - d Affiliate membership has the expectation of the exchange of publications through the Presidents of the respective organizations.
      - e Chapter members shall, if they so choose, receive one copy of the publications of the Society at a reduced subscription rate to be determined by the Board of Directors.
      - f Individual members of organizational members are not automatically members of the Society but are eligible for membership rates for conference registration fees.
  - B The dues for membership shall be determined at the annual meeting.
  - C All individual members shall receive both the *Journal* and the *Newsletter* and shall have voting rights. Organizational members have the right to one vote in the name of their organization and shall designate their representative in writing to the President of the Society.

- II Board of Directors

A The Board of Directors may conduct business in the name of the organization

B The Board of Directors shall appoint annually or as may be necessitated by resignation

1 an editor for the *Journal*

2 an editor for the *Newsletter*

3 an Executive Secretary, whose salary and duties shall be assigned by the Board of Directors.

4 at its discretion, an Executive Director, whose salary and duties shall be assigned by the Board of Directors.

5 those committees necessary for the orderly conduct of the business of the Society

C Meetings of the Board of Directors shall be called by the President or may be requested in writing to the President by three members of the Board of Directors

III Officers

A The officers shall be President, President-Elect, Vice-President, Secretary, and Treasurer

B Officers shall be elected at the annual meeting

1 A slate shall be prepared by the Nominating Committee, which has been appointed by the Board of Directors, and presented prior to the annual meeting

2 Additional nominations may be accepted from the floor as long as prior agreement has been obtained from the nominee

C The duties of the President shall be

1 to conduct all meetings of the organization and the Board of Directors.

2 to supervise the arrangements and program for the annual convention.

3 to execute the business of the organization

D The duty of the President-Elect shall be

1 to act in a presidential capacity in the absence or incapacity of the President.

2 to serve as membership chairperson of the organization.

3 to execute other duties as assigned by the President and assist the President in all possible ways

E The duties of the Vice-President shall be:

1 to act in the capacity of the President or the President-Elect in the event of their absence or incapacity.

2 to execute other duties as assigned by the President

F The duties of the Secretary shall be:

1 to record the proceedings of all meetings of the organization and the Board of Directors.

2 to keep an accurate, up-to-date list of paid members.

3 to disseminate notices and minutes to all members of the society either though separate mailings or the *Newsletter*.

4 to conduct the general correspondence of the Society and have custody of the same

G The duties of the Treasurer shall be

1 to collect membership dues.

2 to keep accurate records of income and disbursements.
3 to furnish regular financial statements to the Board of Directors and an annual report to the membership at the annual meeting and in one of the publications of the Society.
4 to have conducted at least every two years a professional audit of the accounts of the Society.

H. All terms of office shall be for one year, and only the Secretary and Treasurer may serve more than two terms in succession to the same office.

I. The President-Elect automatically succeeds to the office of President.

J. The Board of Directors may fill the unexpired term of any officer by appointment until the next regular election.

IV. Meetings

A. Meetings shall be conducted in accord with *Robert's Rules of Order.*

B. Special meetings may be called by the President or a majority of the Board of Directors.

V. Changes in By-laws

Changes in these by-laws may be made by a two-thirds vote of members of the membership with voting to be conducted at the annual meeting where proxy votes shall also be accepted. Absentee ballots shall also be distributed to the membership for those who choose to vote in this way.

This Constitution and By-laws were first established in 1981, revised in 1984 and 1987.

PROCEDURES FOR AFFILIATION
SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Local, state, national, international, or interest-based organizations are invited to enter into an affiliate relationship with the Society for Accelerative Learning and Teaching if they share and adhere to the purposes of the Society.

To initiate such affiliation organizations should send a request for same in writing to the President of the Society and provide a copy of the requesting organization's constitution and by-laws or statement of accepted organizational principles. Either affiliate or chapter membership may be requested. Affiliate membership is available to national and international organizations while chapter membership is available to interest-based, local, and state organizations.

The appropriateness of relationship and category will be decided by the Board of Directors of the Society for Accelerative Learning and Teaching. The expectations of such a relationship are:

1. Affiliate members will exchange publications through the Presidents or Heads of the organizations
2. Chapter members shall receive one copy of the publications of the Society for Accelerative Learning and Teaching at a reduced rate This rate will be determined by the Board of Directors of the Society
3. Individual members of either affiliate or chapter members are eligible for membership rates for conference registration fees
4. Such organizational members have the right to one vote in matters of the Society and shall designate their representative for voting in writing to the President of the Society

The current President of the Society for Accelerative Learning and Teaching is James Hand University of Illinois 1601 Parkview Avenue, Rockford, Illinois 61107 USA

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Volume 11, Number 2 Summer, 1986

Published by the Society for Accelerative Learning and Teaching, Inc.

ISSN 0273-2459

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Guidelines for Contributors

The Editor welcomes submission of manuscripts on an interdisciplinary nature relevant to all aspects of suggestive learning-teaching-therapy counseling within the theoretical and procedural confines of Suggestology and/or Suggestopedia. The JOURNAL FOR THE SOCIETY OF ACCELERATIVE LEARNING AND TEACHING will publish a wide variety of articles - including critical reviews, theoretical analyses, speculative papers, case studies, quasi-experimental studies, as well as reports of empirical research (basic or applied) of major significance. The basic focus is Suggestopedia theory , research and application.

MANUSCRIPTS should be typed on one side of standard (8 ½ x 11 non-corrasable) bond typewriter paper, clearly mimeographed or multilithed. *Do not use ditto.* The original and three copies (carbon or dry electrostatic copies) should be submitted. Authors should also keep a personal copy to check against proofs. *All material must be double-spaced*, with ample margins (1 ½ in. on each side and 1 ½ on top and bottom). Any paper should not be longer than 20 typewritten pages, excluding bibliography, footnotes, tables, figures, etc. In special cases, longer papers may be submitted for publication.

REFERENCES should follow APA style. Authors should follow the standardized bibliographic format for reference citation as shown in the American Psychological Association Manual (1974). In the body of the text, the published work of others should be referred to by name and publication date in parentheses as follows, "Prichard and Taylor (1976) reported..." In the bibliography at the end, the referred-to articles should be listed fully in alphabetical order by author(s), title and publication source information as follows, "Prichard, A. & Taylor, J. Adapting the Lozanov method for remedial instruction. *Journal of Suggestive-Accelerative Learning and Teaching*, 1976 (Sum), 1(2), 107-115." Footnotes should be used to refer to unpublished material not generally available to readers, for example in the text, "Schuster claimed that relaxation..." A list of all footnotes should be typed on a separate sheet and placed between the end of the text and before the bibliography. An example of an entry in this list of footnotes is, "Schuster, D.H. The effects of relaxation and suggestions on the learning of Spanish words. Unpublished report, Psychology Department, Iowa State University, 1972, 6pp."

TABLES AND FIGURES should be kept to an absolute minimum and should supplement rather than duplicate text material. Each table should be typed on a separate sheet and be placed after the reference section of the manuscript. Figures should be submitted in a form suitable for photographic reproduction. Use India ink on a good grade of drawing paper. Photographs (black and white only) submitted as figures should be 5 x 7 inch glossy prints, uncropped and marked lightly on the back with a pencil. Submit all figures, photographs and tables with each of the four sets of manuscript materials.

ABSTRACTS between 50 and 200 words of each manuscript should be typed on a separate sheet and placed at the beginning of the manuscript.

PROOFS in typescript form of each article, letter to the Editor, brief communication, or book review will be returned to the author upon final acceptance of a manuscript. These are to be reviewed carefully and returned to the Journal's publication address within 5 working days. Typescripts not returned within this time limit will be considered approved. Authors are cautioned to read all tabular material and quotes against their copy of the original manuscript. Authors will receive 5 copies of their work on publication.

All manuscripts should be delivered by first class mail to:

Editor

The Journal of the Society for Accelertive Learning and Teaching
Psychology Department, Iowa State University, Ames, Iowa 50010

JOURNAL OF THE SOCIETY FOR ACCELERATIVE
LEARNING AND TEACHING

Volume 11, Number 2 .... Summer 1986

CONTENTS

Effects of the Suggestive-Accelerative Learning and Teaching Methods and a Structural Analysis Method on Vocabulary
JoAnn Bass 67

Teaching English Grammar and Punctuation Rules and Practice A Five-year Study of SALT & Suggestopedia Methods
Stephan Cooter 83

Intelligence's Secret: The Limbic System and How to Mobilize it Through Suggestopedia
Luiz Jose Machado de Andrade 103

Suggestopedia Research in the GDR A Personal Report
Sigrid Gassner-Roberts 115

Suggestibility as it Relates to Responses to Three Levels of Suggestion in Four-year Old Children
Kim M. Wilson 123

Book Review
Master Teaching
by Bernard F. Cleveland
Reviewed by John Senatore 131

J. of the Society for Accelerative Learning and Teaching, 1986, 11(2)

Effects of Suggestive-Accelerative Learning and Teaching and Structural Analysis on Vocabulary Learning

Jo Ann F. Bass

Abstract. The Suggestive-Accelerative Learning and Teaching (SALT) method, the structural analysis method, and a combination of the two methods were investigated to determine their effects on vocabulary learning and attitudes toward the treatments. Fifty-eight college freshmen were taught 390 words and definitions in 13 lessons. The SALT group was taught words and definitions using the SALT components of suggestion, relaxation, music and imagery. The structural analysis group was taught words, definitions and 226 word parts without using any SALT components. The combination group was taught words, definitions and word parts using all SALT components. Each group made significant gains from pretest to posttest on vocabulary taught in the study. On comparisons among groups, the SALT group had significantly higher posttest and gain scores than the structural analysis group. No significant differences were found among the groups on vocabulary not taught in the study and in attitudes toward the treatments.

Success in college is often dependent on the ability of students to comprehend the information contained in the reading materials required for the courses in which they are enrolled. Often students lack the vocabulary necessary to comprehend their college reading materials. When this lack occurs, teachers are faced with the problem of efficiently teaching a large amount of vocabulary in a short amount of time. Probably the most widely accepted method of teaching vocabulary at the secondary and college level is the structural analysis method in which the meanings of Greek and Latin prefixes, suffixes and root words are taught and applied to words containing these word parts. There are however some accelerated-learning methods used rather extensively in countries in the Soviet Bloc and to a lesser degree in the United States which might prove useful in teaching words to students who need to increase their vocabularies. Bayuk (1983) listed four of these methods which might accelerate learning. Hypnopedia involves the playing of instructional tapes during natural sleep. In rhythmopedia, information is presented during induced sleep or hypnosis. Suggestopedia, which imparts information to students who are relaxed but awake, includes the giving of suggestions by the teacher. Relaxopedia is similar to suggestopedia, but in relaxopedia, suggestions by the teacher are not used.

Of these four accelerated-learning methods, suggestopedia and relaxopedia could possibly be used in American classrooms, but only suggestopedia has generated even moderate interest in the Western academic world. According to Harris (1981), "suggestopedia is a new development in the application of psychological techniques to education, and one worth watching" (p. 408). Yellin (1983) characterized suggestopedia as a holistic approach and stated, "It is now time for the academic community to examine the potential of these holistic approaches for improving learning in the schools" (p. 38).

Suggestopedia, often referred to as suggestology or the Lozanov method, was developed by a Bulgarian physician and psychotherapist named Georgi Lozanov (Lozanov, 1971, 1978). The method was introduced to the West in the early 1970s, and with only fragmentary information, a group of educators in Iowa began to conduct research into the method. Spearheaded by Dr. Donald H. Schuster, a psychology professor at Iowa State University, the group developed an American version of suggestopedia which they called Suggestive-Accelerative Learning and Teaching (SALT). The method uses a combination of physical and mental relaxation exercises., imagery, music and suggestive principles to increase learning (Schuster & Gritton, 1986).

The SALT method has been used to teach foreign languages, science, math, statistics, spelling, agriculture and reading. Some studies have been conducted in which the components of the method were manipulated to test the effectiveness of each. In other studies, the method was used in its entirety to determine whether or not learning was enhanced.

In studies involving the total SALT method to teach reading, all but one of the studies found that the use of the method aided in improving reading performance. Using elementary subjects of average ability, Prichard, Schuster and Gensch (1980) found that students in the SALT experimental group performed significantly better than those in the control group when they were compared on reading comprehension and vocabulary subtests. Prichard and Taylor (1980) reported that over a five-year period of SALT experimentation with remedial readers at the elementary level, students averaged around four months gain in reading scores for one month of instruction. Schuster and Vincent (1980) found that ninth graders who were termed learning disabled showed a significant improvement in reading test scores from pretest to posttest when the SALT method was used to teach them reading. These gains were double the typical gains of conventionally taught learning disabled students. In a study which dealt with word recognition only, Nelson (1979) found that elementary students with learning and behavioral deficits who were taught new words by the SALT method scored significantly higher than the control group which was taught with the traditional approach consisting of presenting the new words on flash cards, pronouncing and spelling the words, and using them in sentences. A word identification study by Hales (1983) in which the subjects were mildly and moderately retarded found that suggestopedic techniques did not significantly affect the number of words identified when compared to the traditional teaching approach.

While research involving the SALT method for teaching reading skills appears to support the method as an aid in improving reading performance there is a lack of consistency in the findings reported in studies using the structural analysis method. In early studies, Henmon (1921) and Tate (1938) found that the study of root words tended to increase vocabulary acquisition. These findings were contradicted by later studies. Otterman (1955) reported that the experimental group taught prefixes and root words made a significant gain over the control group in spelling but not in speed of visual and auditory perception, vocabulary, reading comprehension or reading speed. Hoisington (1968) concluded that directed vocabulary instruction emphasizing the structural analysis of words can be of benefit in improving reading comprehension and that further study is warranted in vocabulary and spelling since no significant differences were found to exist between the groups used.

In recent years, there has been an interest in teaching Latin as a means of improving vocabulary. Two studies (Bassman & Ironsmith, 1984; *Evaluation of the FLES*, 1971) found that experimental groups taught Latin made significantly greater gains on standardized vocabulary tests than the control groups. Improvement in the vocabularies of students studying Latin was noted in other studies in the literature (Baca, 1977-78; Masciantonio, 1975; Offenberg, Montalvo & Brown, 1971; Scanlan, 1976).

From the review of related literature, it was found that no controlled study had been conducted in which the complete SALT method was used to teach vocabulary commonly found in college level reading material. Previous studies had sought to evaluate the SALT components using extremely rare English words. As for structural analysis, research studies did not contain statistical analyses of the data, and the Latin studies usually taught the word parts as a foreign language and not as a part of a reading or English class.

In this study, I attempted to compare the relatively new teaching method, SALT, with the more established method of teaching vocabulary, structural analysis, and to determine if the results of a combination of the two methods were greater than those of either method used separately. Based on the review of the literature, it was assumed that each group would improve their vocabularies. It was also assumed that the SALT group and the SALT plus structural analysis group would perform better than the structural analysis group on comparisons among the three groups. Specifically, the SALT group and the SALT plus structural analysis group should score higher in measures of vocabulary taught in the study, also vocabulary not taught in the study, and attitudes toward the methods. This assumption was based on studies of the SALT components which indicated that all of the components have important functions in the learning process (Padawer, 1977; Stein, Hardy, & Totten, 1982; Whidby, 1974).

Method

Subjects

The sample for this study consisted of 54 volunteers who were enrolled in freshman level English classes and 4 volunteers who were enrolled in a freshman level speech communication class. All 58 subjects were students at a private, two-year college in north Georgia. For participating, the subjects received points on their final grade in English or speech class. Students who had no more than two absences during the study had three points added to their final grade; those absent no more than four times received two points.

All subjects were placed in rank order on the basis of their scores on the vocabulary pretest. They were randomly assigned to groups by alternating from high-ranked students to low-ranked students until all subjects were placed. The number of subjects in each treatment group ranged from 19 to 20.

Materials

Several materials were developed for this study. These materials were: instructional texts of vocabulary terms, a multiple-choice vocabulary pretest and a multiple-choice vocabulary posttest, physical relaxation exercises, mental relaxation activities, early pleasant learning restimulation activities, practice activities, daily quizzes, and presentations on the relevance of word parts in building vocabulary.

Instructional texts of vocabulary terms. Five lists of word parts were consulted (Brownstein, 1978; Dale, O'Rourke, & Bamman, 1971; Ehrlich, 1968; Katz & Silver, 1981; Monson, 1958), and 226 prefixes, suffixes, and root words which appeared on at least three of the five lists were selected. Thirteen subject matter areas were selected to serve as themes for the lessons. Words that included each of the 226 word parts and were relevant to the subject areas were selected from books, newspapers, magazines, and other reading material generally available to college students. The word selection process continued until there were 30 words for each subject area. Original definitions were written after consulting several dictionaries. Instructional sheets for the SALT group contained words and definitions, and sheets for the structural analysis group and the SALT plus structural analysis group contained words, word parts, and definitions.

Vocabulary pretest and posttest. Using a table of random numbers, 100 words were selected from the 390 words chosen for the study. A 100-item multiple-choice test was constructed which required that the correct definition for a target word be selected from four options. After the entire test was constructed, a flip of a coin determined that odd-numbered items would make up the pretest, and the posttest would consist of the even-numbered items. Scores from these tests were used to assess student performance on vocabulary taught in the study.

Physical relaxation exercises. Four physical relaxation exercises, each lasting about one minute, were written for use at the beginning of the SALT and the SALT plus structural analysis groups' lessons. These exercises involved the neck and shoulder muscles in tensing and releasing movements designed to ease muscular tension. One of these exercises appears in Figure 1.

Figure 1. Physical relaxation exercise 1

The Front Neck Roll

The lesson begins with a physical relaxation exercise. You may remain seated. Both feet should be on the floor, and your hands should be on your lap.

Watch as I demonstrate the front neck roll. (The instructor stands and faces the students.) To begin the exercise, turn your head as far to the right as you can. Then lower your head until your chin touches your shoulder. Now slowly move your head to the left, being careful to keep your chin low. Stop with your chin on your left shoulder. Reverse the movement to make one complete cycle. We will do three cycles.

Ready? Begin. Touch the right shoulder. Roll to the left. Touch the left shoulder. Now roll to the right. Stop on the right shoulder. Once more. Roll left. Touch the shoulder. Roll back. Touch the right shoulder. Last time. Roll left. Touch shoulder. Roll right. Touch shoulder. Bring your head to its normal upright position and relax.

Mental relaxation activities. Guided imagery activities designed to help students forget their present problems and focus their attention on what the teacher is saying were written. Six tape-recorded activities, each approximately three minutes in length, were evaluated for effectiveness by five students who did not participate in the study. The four activities rated as most relaxing were used during the study, and the two lowest-rated activities were eliminated. An example of one of these activities is presented in Figure 2.

Figure 2. Mental relaxation activity 2

The Lake

Continue your physically relaxed feeling by sitting in a comfortable position. Breathe slowly and close your eyes as you visualize a pleasant scene in nature.

Imagine yourself standing on a hillside overlooking a small lake. It is a warm, spring day. The sky is a clear, blue color. All is calm.

You look around and see yellow daffodils growing along the hillside. Some of the trees have swollen buds on the tips of their twigs, almost ready to open into leaves. The weeping willow trees down near the water already have tiny, yellow-green leaves, giving them a delicate, airy appearance.

As you walk down the hillside toward the lake, you notice the grass has a fresh, green color. You come to the edge of the lake and look out across the still, blue water. The water is like a mirror, reflecting images of the trees on the opposite bank. Looking closely at the surface of the water, you see an occasional ripple in the shape of a circle.

Your eyes catch a glimpse of motion, and you look up just in time to see a pair of ducks land on the bank on the far side of the lake. You watch them as they waddle toward the water. They make a gentle splash as they get into the water and begin swimming in single file. They glide effortlessly and serenely toward the center of the lake. The ducks make a V-shaped ripple in the water behind them as they swim.

You have a calm and serene feeling. You are refreshed both mentally and physically.

Early pleasant learning restimulation activities. Four activities lasting about one minute each were written to help students develop a positive feeling toward learning. Students were asked to recall vividly a time when learning was pleasant and then to bring the feelings associated with that pleasant learning experience to the present learning situation. See Figure 3 for one of these activities.

Figure 3. Early pleasant learning restimulation activity 1

Easy Learning

During the next part of the lesson, try to maintain your relaxed feeling. I want you to recall a time during your childhood when learning was pleasant and easy. Maybe you got a new model or kit, and it was so easy to assemble that the pieces just seemed to fall into place. You may remember that playing ball was easy for you to learn.

Recall as much as you can about the experience. Where were you? Who was with you? Look at the way your body was responding to the learning situation. See what was happening to your stomach. Remember the expression you felt was on your face when learning was easy.

Let the feelings you had then become real to you now. Learning new words will be pleasant and easy for you. We're ready to begin the next part of the lesson.

Practice activities. Activities designed to get students to activate and elaborate on the lesson material were written These activities included making sentences containing new words, creative writing, and dialogs Figure 4 contains a practice activity for one lesson

Figure 4 Practice activity 1

Practice Activity on Agriculture Words

Students are asked to imagine that they are farmers who have had their farms selected for the Spring Tour of Farms. They are to write what they would say to their visitors from the city as they show them around the farm. They should use as many of the words and definitions that they have studied as possible

Daily quizzes. A quiz which required students to match the word with its correct definition was prepared for each lesson. The purpose of the quizzes was to provide students with a measure of their progress. Students scored their own papers, and the instructor did not see or check the papers

Presentations on the relevance of word parts in building vocabulary. Four presentations on the relevance of word parts in building vocabulary were prepared for use with the structural analysis group, and one was delivered each day to correspond to the time in which the SALT and the SALT plus structural analysis groups received the physical exercises, mental relaxation activities, and early pleasant learning restimulation activities These presentations were intended to show the subjects that the structural analysis method was a viable one for improving vocabulary

Two instruments were chosen to measure the dependent variables. One instrument was a form of the Scholastic Aptitude Test (SAT) used by Educational Testing Service (ETS) in 1983 which provided a measure of student performance on vocabulary not taught in the study. The two 30-minute verbal sections consisting of antonyms, analogies, sentence completion, and reading comprehension were administered. Another instrument, the Listed Thought Procedure (LTP), measured the attitudes of the students toward the three methods of instruction. In this procedure, the subjects wrote their own thoughts about the method of instruction used with their group and rated the degree to which they held the opinions Cullen (1968) compared the LTP with the Thurstone and the Likert-type procedures Test-retest reliabilities of 62 to 66 were reported for the LTP

Procedure

Each of the three groups met for 15 sessions including pretesting, lessons, and posttesting. The pretesting and teaching sessions were approximately 40 minutes long, and the posttesting session lasted about 90 minutes. The sessions covered a period of eight weeks.

Students in the SALT group received vocabulary instruction using the complete SALT method. The first five minutes of the lesson consisted of a physical relaxation exercise, a mental relaxation activity, and an early pleasant learning restimulation activity. During the next 10 minutes, the 30 vocabulary terms and their definitions were presented with the use of gestures, facial expressions, and varying intonations. Students were asked to follow along on their instructional sheets and to form images for the words that were interactive, vivid, unusual, and involved as many of the senses as possible. In the next 10-minute segment, a commercial tape (Superlearning Exercises, 1979) of baroque music with 60 beats per minute played in the background. The teacher synchronized the oral reading of the words and definitions with the music. Students were instructed to relax, synchronize their breathing with the music and the reading, and recall the images that they generated during the previous part of the lesson. A practice activity and the daily quiz were completed during the last 15 minutes of each lesson.

Subjects in the structural analysis group were taught using the conventional method of teaching prefixes, suffixes, and root words. Relaxation, imagery, suggestion, and music were not used. During the first five minutes of the lesson, students received a presentation on the relevance of word parts in building vocabulary. In the 10-minute segment that followed, the 30 words, word parts, and definitions were presented as students followed along on their instructional sheets. Students were told to notice the way the word parts and definitions were related to the words and their definitions and to use the word parts as keys to remembering the definitions of the words. A 10-minute review in which the teacher reread the words, word parts, and definitions while the students followed along on their sheets was next. A practice activity and the daily quiz were completed during the last 15 minutes.

The SALT plus structural analysis group was taught using the same procedure as the SALT group with only one difference. During the presentation of words and definitions, word parts contained in each word were introduced.

Instructor evaluation

Since the vocabulary lessons were taught by the researcher, an evaluation was conducted to determine if the researcher's behavior was consistent among the groups. Five volunteers observed the instruction and indicated the degree to which they thought the researcher exhibited each characteristic in a standard set of six statements. Four of the statements received the same rating by all five evaluators. The statements were: shows enthusiasm, demonstrates sincerity, possesses a sense of purpose, and emphasizes the importance of material. The ratings for the two remaining statements varied by 0.2 of a point. The statements were: exhibits belief in method of instruction, and establishes belief that learning will occur. It was concluded that the researcher behaved in a generally consistent manner in all three groups.

Results

The primary purpose of this study was to compare three methods of teaching vocabulary: the SALT method, a structural analysis method, and a combination of the SALT and the structural analysis methods. This purpose was accomplished by analyzing data collected with various instruments. The vocabulary posttest provided a means of comparing students on vocabulary taught in the study. The verbal sections of the SAT provided a means of comparing students on vocabulary not taught in the study, and the LTP provided a means of comparing students on attitudes toward the methods of instruction. The means and standard deviations of the vocabulary pretest, posttest, and gain scores are presented in Table I. The means and standard deviations of the SAT raw scores and the LTP are presented in Table II.

Table I. Means and Standard Deviations of Vocabulary Pretest, Posttest, and Gain Scores

Group	*n*	Pretest *M*	Pretest *SD*	Posttest *M*	Posttest *SD*	Gain *M*	Gain *SD*
1	19	21.58	9.49	35.59	11.38	13.16	9.66
2	20	23.40	9.22	30.85	9.44	8.00	4.71
3	19	23.05	6.15	34.88	8.69	12.11	7.64

Note. Group 1 = SALT, Group 2 = Structural analysis, Group 3 = SALT plus structural analysis.

Table II. Means and Standard Deviations of SAT Raw Scores and Listed Thought Procedure Scores

Group	*n*	SAT *M*	SAT *SD*	LTP *M*	LTP *SD*
1	19	24.21	16.45	1.48	1.36
2	20	26.35	20.63	1.13	1.61
3	19	27.42	17.26	1.34	1.27

Note. Group 1 = SALT, Group 2 = structural analysis, Group 3 = SALT plus structural analysis.

The vocabulary posttest scores were compared among groups. An analysis of covariance (ANCOVA) was performed to control for differences among groups on the vocabulary pretest. This analysis indicated that significant differences existed among the groups, $F(2,54) = 2.35$, $p = .05$, one-tailed test. A post hoc Tukey test was used to determine which posttest means were significantly different. This comparison indicated that the adjusted posttest mean of the SALT group was significantly higher ($p < .05$) than that of the structural analysis group. There was no significant difference between the SALT group and the SALT plus structural analysis group or between the structural analysis group and the SALT plus structural analysis group.

A correlated t test was performed for each group's gain in vocabulary scores from pretest to posttest. The SALT group showed a significant gain in vocabulary scores from pretest to posttest, $t(18) = 5.94$, $p = .00005$, one-tailed test. The structural analysis group also showed a significant gain from pretest to posttest, $t(19) = 7.59$, $p = .00005$, one-tailed test. Likewise, the SALT plus structural analysis group made a significant gain from pretest to posttest, $t(18) = 6.90$, $p = .00005$, one tailed test.

Total rounded raw scores on the verbal sections of the SAT were used to compare student performance on a test containing vocabulary not taught in the study. A one-way ANOVA produced no significant differences among the treatment groups, $F(2,55) = 0.15$, $p = .43$, one-tailed test.

The mean LTP scores were used for comparing the attitudes of students toward the three teaching methods. No significant differences were found among treatment groups when the LTP scores were compared using a one-way ANOVA, $F(2,55) = 0.31$, $p = .37$, one-tailed test.

Discussion

Since each treatment group showed significant gains from pretest to posttest, it is assumed that each method of instruction aided the subjects in learning the vocabulary taught in the study and that each method may have a significantly positive effect in facilitating vocabulary learning. Several factors may have been involved in this result. All groups received instruction which was highly organized and which focused entirely on vocabulary. Each method required a high level of involvement from students in the practice activities and quizzes, and the quizzes provided immediate feedback to the students. Each method used some means of association for helping the students in remembering the definitions. In addition to the methods themselves, the instructor may have contributed to the differences in pretest-posttest scores by communicating a belief that learning would occur with each teaching method.

The significant differences in posttest means and gain score means in favor of the SALT group indicate that the SALT method was apparently superior to the structural analysis and possibly the SALT plus structural analysis methods under the conditions present in the study. The suggestion, relaxation, imagery, and music components of the SALT method and the teaching of definitions only may have contributed to the higher scores obtained by the SALT group. From comments made by the students on the LTP, some students in the structural analysis group felt the word parts did not aid them in their learning. Some students in the SALT plus structural analysis group commented on the LTP that they felt rushed; others stated that they needed more time for the method to work.

From the findings of the verbal sections of the SAT, it can be assumed that short-term vocabulary instruction using any of the methods in this study is likely to have about the same effect on students' verbal scores on the SAT. It appears that none of the methods significantly improved SAT verbal performance. Perhaps the vocabulary taught in this study was too specific and was not applicable to a general, standardized test of vocabulary such as the SAT.

Since the analysis of data revealed no significant differences among groups in their attitudes toward the methods, this finding suggests that students in the three groups had similar views of the methods. All groups showed slightly to moderately favorable attitudes toward the methods. On the LTP, about the same percentage of statements was written by students in each group indicating they felt their vocabularies had improved as a result of the vocabulary study.

Implications for Research

Several implications can be drawn for further research which attempts to increase vocabulary learning. Only three ways of presenting vocabulary were compared in this study. Other methods could or need to be investigated to determine their effects on vocabulary development.

The present study should be replicated to determine if there are significant differences among these same teaching methods for students of other age groups. Replication in other geographical locations would also be beneficial.

No attempt was made in the present study to determine students' socioeconomic levels, ability levels, or learning styles. It might be worthwhile to determine the effectiveness of each method with subjects who have been evaluated according to these characteristics.

The complete SALT method was used to teach vocabulary in this study. The SALT components should be studied individually and in various combinations to determine which of the components account for differences which may exist among groups.

Subjects were tested approximately one week after the last vocabulary lesson. It is not known if the methods differ in long-term effects and in applicability to other subjects and classes.

Student attitudes toward the three treatments need more extensive study. The relation between voluntary participation and attitudes was not explored; neither was the issue of boredom and how it affects student performance. Because 30% of the subjects in the structural analysis group commented on the LTP that the method of instruction used by their group was boring such an investigation appears to be warranted

Conclusion

The findings of the present study should be encouraging to those interested in vocabulary development They support the hypothesis that the SALT, structural analysis, and SALT plus structural analysis methods can have a significantly positive effect in facilitating vocabulary learning Further, the SALT method emerged as being superior to the structural analysis method The combination of the SALT and the structural analysis methods as a way of teaching vocabulary under the conditions present in this study was not significantly different than either of the other methods These findings are important because they assure teachers that any of the methods can enhance vocabulary learning They also suggest a need for the SALT method to be added to the repertoire of methods used in education and for teacher education programs to include SALT in their methods courses

* * * * * *

References

Baca, A.R. (1977-78). An innovative language program in Los Angeles. *The Classical Journal, 71,* 257-260.

Bassman, M.F. & Ironsmith, M. (1984). An experimental FLES program in Latin. *ADFL Bulletin, 16,* 39-41.

Bayuk, M. (1983). Socio-cultural environments and suggestopedia. *Journal of the Society for Accelerative Learning and Teaching, 8,* 31-40.

Brownstein, S.C. (1978). *Barron's how to prepare for college entrance examinations* (9th ed.). Woodbury, NY: Barron's Educational Series.

Cullen, D.M. (1968). Attitude measurement by cognitive sampling. *Dissertation Abstracts International, 29,* 1597A.

Dale, E., O'Rourke, J., & Bamman, H.A. (1971). *Techniques of teaching vocabulary.* Menlo Park, CA: Benjamin/Cummings.

Ehrlich, I.L. (1968). *Instant vocabulary.* New York: Pocket Books.

Evaluation of the FLES Latin program in the Washington, D.C. public schools, 1970-1971. (1971). Washington, DC: Public Schools of the District of Columbia. (ERIC Document Reproduction Service No. ED 060 695)

Hales, V.E. (1983). Suggestopedia: Its effects on word identification skills of mildly and moderately retarded children. *Dissertation Abstracts International, 44,* 1053A.

Harris, A.J. (1981). What is new in remedial reading? *The Reading Teacher, 34,* 405-410.

Henmon, V.A.C. (1921). An experimental study of the value of word study. *Journal of Educational Psychology, 12,* 98-102.

Hoisington, A.L. (1968). An experimental investigation of a linguistic approach to vocabulary development which emphasizes structural analysis: prefixes, suffixes and root words. *Dissertation Abstracts International, 29,* 3041A.

Katz, I.W. & Silver, M.L. (1981). *How to prepare for the Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test.* New York: Harcourt Brace Jovanovich.

Lozanov, G. (1978). *Suggestology and Outlines of Suggestopedy.* (M. Hall-Pozharlieva & K. Pashmakova, Trans.) New York: Gordon and Breach. (Original work published 1971 in Bulgaria)

Masciantonio, R. (1975). In the schools. *The Classical World, 68,* 444.

Monson, S.C. (1958). *Word building.* New York: Macmillan.

Nelson, W. (1979). Experimentation with the Lozanov method in teaching word retention to children with learning disabilities. *Journal of Suggestive Accelerative Learning and Teaching, 4,* 228-271.

Offenberg, R.M., Montalvo, D. & Brown, E.K. (1971). *Evaluation of the elementary school (FLES) Latin program 1970-1971.* Philadelphia: School District of Philadelphia. (ERIC Document Reproduction Service No. ED 056 612).

Otterman, L.M. (1955). The value of teaching prefixes and word-roots. *Journal of Educational Research, 48,* 611-616.

Padawer, D.D. (1977). Reading performance of relaxation trained children. *Dissertation Abstracts International, 38,* 1306A.

Prichard, A., Schuster, D.H. & Gensch, J. (1980). Applying SALT to fifth grade reading instruction. *Journal of Suggestive-Accelerative Learning and Teaching, 5,* 52-58.

Prichard, A. & Taylor, J. (1980). SALT applied to remedial reading: A critical evaluation. *Journal of Suggestive-Accelerative Learning and Teaching, 5,* 74-80.

Scanlan, R.T. (1976). A computer-assisted instruction course in vocabulary building through Latin and Greek roots. *Foreign Language Annals, 9,* 579-583.

Schuster, D.H. & Gritton, C. (1986). *Suggestive-accelerative learning techniques: Theory and applications.* New York: Gordon & Breach.

Schuster, D.H. & Vincent, L. (1980). Teaching math and reading with suggestion and music. *Academic Therapy, 16,* 69-72.

Stein, B.L., Hardy, C.A. & Totten, H.L. (1982). The use of music and imagery to enhance and accelerate information retention. *Journal of the Society for Accelerative Learning and Teaching, 7,* 341-356.

Superlearning Exercise and Music Cassette. (1979). (Cassette Recording No. 101). New York: Superlearning, Inc.

Tate, H.L. (1938). Two experiments in reading-vocabulary building. *Modern Language Journal, 23,* 214-218.

Whidby, N.L. (1974). Waking suggestion: A method to improve reading in elementary education. *Dissertation Abstracts International, 35,* 1516A-1517A.

Yellin, D. (1983). Left brain, right brain, super brain: The holistic model. *Reading World, 23,* 36-44.

*** *** ***

Les Methodes d'enseignement et d'apprentissage Suggestif-Acceleratif et ces Effets, et une Methode d'analyse Structurale sur le Vocabulaire

La methode suggestif-acceleratif d'enseignement et d'apprentissage SALT, les methode d'analyse ont ete examiner pour determiner leurs effets sur l'apprentissage du vocabulaire, et les attitudes envers ces traitement. Cinquante-huite etudiants d'universite de premiere annee ont ete enseigne des mots et des definitions utilisant les composants de suggestions, de relaxation, musique et images mentale visuelle. Le groupe d'analyse structruale a ete enseigne des mots, definitions, et 226 mots detaches sans l'usage des composants SALT. Le groupe combine a ete enseigne des mots definitions, et des mots detaches utilisant tous les composants SALT. Chaque groupe a demontrer de gains favorables avant et apres les examins sur le vocabulaire enseigne dans cette etude. En comparaisons, le groupe SALT a demontrer de meilleurs resultats avant les examins et de marques considerablement plus elevees que le groupe d'analyse structurale. Aucune difference significante a ete etablie parmi les groupes sur le vocabulaire non enseigne dans l'etude et dans les attitudes envers les traitements.

Auswirkungen der suggestiv-beschleunigenden Lern- und Lehrmethode und einer Strukturanalysenmethode auf das Vokebellernen

Die suggestiv-beschleunigende Lern- und Lehrmethode (SALT), die Strukturanalysenmethode, und eine Kombination der beiden Methoden wurden untersucht, um herauszufinden, welche Auswirkungen sie auf das Vokabellernen hätten, und wie sich die Schüler zur jeweiligen Methode einstellten. 58 Universitätserstsemestrige wurden 390 Wörter und Definitionen in 13 Unterrichtsstunden gelehrt. Die SALT Gruppe wurde die Wörter und Definitionen mittels der SALT Komponenten Suggestion, Entspannung, Musik, und Verbildlichung gelehrt. Die Strukturanalysengruppe lernte die Wörter, Definitionen und 226 Wortteile ohne SALT Komponenten zu verwenden. Die Kombinationsgruppe lernte Wörter, Definitionen und Wortteile unter Verwendung aller SALT Komponenten. Jede Gruppe machte bedeutende Fortschritte im Vokabular, das gelehrt wurde. Bei Vergleichen zwischen den Gruppen erzielte die SALT Gruppe bedeutend bessere Resultate als die Strukturanalysengruppe. Keine nennenswerten Unterschiede zwischen den Gruppen wurden bezüglich im Versuch nicht gelehrter Vokablen als auch der Einstellung zur Unterrichtsmethode gefunden.

Effectos de Los Metodos de Aprendizaje y Enseñanza Sugestiva-Acelerada y Un Metodo de Analisis Estructural sobre Vocabulario

El metodo de aprendizaje y enseñanza sugestiva-acelerada (SALT), el metodo de analisis estructural, y una combinacion de los dos metodos fueron investigados para determinar sus efectos sobre aprendizaje de vocabulario y actitudes hacia los tratamientos. Cincuenta y ocho estudiantes de primer año de universidad fueron enseñados 390 palabras y definiciones a lo largo de 13 lecciones. El grupo SALT fue enseñado palabras y definiciones utilizando los componentes SALT de sugestion, relajacion, musica, e imagineria. El grupo de analisis estructural fue enseñado palabras, definiciones, y 226 partes de palabras, sin utilizar ningun componente SALT. El grupo combinado fue enseñado palabras, definiciones, y partes de palabras utilizando todos los componentes SALT. Cada uno de los grupos mostro incrementos significativos de pretest a postest en el vocabulario enseñado en este estudio. En comparaciones entre grupos, el grupo SALT obtuvo marcas de postest y de incremento significativamente mas altas que el grupo de analisis estructural. No se encontraron diferencias significativas entre los grupos en vocabulario no enseñado en este estudio ni en actitudes hacia los tratamientos.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(2)

English Grammar and Punctuation Rules and Practice: A Five-Year Study of SALT & Suggestopedia Methods

Stephan Cooter

Abstract. In five years of using SALT-Lozanov methodology, class names, introductory decoding, concert-music lectures, dramatic readings by students, dialog games, relaxation exercises, and positive suggestion, it may be as easily possible to learn the abstract information of grammar, punctuation rules, and applications as it has been to acquire a foreign language. Within three weeks of a term, students "conversed" in grammar as "fluently" as most people discuss the weather. By the end of a ten-week term, the students were not only fluent but accurate at or beyond an 80 percent level as measured by objective tests. When Ron Ennis asked if this kind of knowledge had any depth, I remembered that the parent-creator of this grammar class attended the class one day toward the end of the term: to my delight, the students taught with these methods were faster and more accurate than the old grammarian-teacher-visitor who invented the class.

After 15 years of attempting to have students learn English grammar and punctuation--and then failing--I wanted to try suggestopedic-accelerated methods. My usual experience was succeeding at getting students to communicate clearly, to become fluent, to explore with the higher cognitive processes of classification, analysis, logic in both composition and literature classes. But when it came to remembering "the small things," a rule for an apostrophe, or the placement of a semicolon for instance, I had little success. I might place a rule for the uses of an apostrophe on the blackboard, write out examples, practice applications. That first day of the presentation, I was convinced that students both understood and applied rules successfully. Two weeks later, however, student papers would come in: some of the apostrophes were in the right places, some had wandered to the wrong places. By the end of the term, most of the apostrophes had either wandered or disappeared. I asked the class, "What's the rule for the apostrophe?" No one volunteered. I waited the decent five seconds and called on one student who--I knew--had been present at my "perfect" presentation and who understood that rule in the "best of all possible ways"--that day. The student replied, "What's an apostrophe?"

I speculated that something was peculiar about remembering factual information. Term after term *rules and reasons* seemed to erase themselves. Could there be some way of presenting simple abstract information that could ensure retention? I set out to find out and try something different. Obviously, my rational presentation of rules, reasons, examples, and practice had not worked. Perhaps, there was another way of doing it. After reading Ostrander, Ostrander and

Schroeder's *Superlearning* (1979), I had hope equally mixed with misgivings. My misgivings were prompted by the fear that I would leave out some mystical feature of this new system, or fail to coordinate some important facet of methodology. After sending off for the original first year's *Suggestology and Suggestopedia,* Bulletin of the Suggestology Research Institute, in Bulgaria, which I acquired from the useful address in the appendices to Superlearning (Lozanov Learning Center, 1310 Apple Avenue, Silver Spring, MD 20910), my misgivings were intensified by reading the Russian criticism of Lozanov's work by N. V. Smirnova, "Progress in Experimental Instruction in the Course of Suggestology at the V.I. Lenin Moscow State Pedagogical Institute." I took special note that, although students gained fluency in speaking, suggestopedia seemed weak in "the little things" of "spelling and grammatical and phonetic mistakes"--the very area I wanted to emphasize. I was further discouraged by Georgi Lozanov's observation in *Suggestology and Outlines of Suggestopedy* (1978) that emphasis on rules of grammar and correctness impeded learning a language, perhaps interfered with any learning altogether. Yet this was the very subject matter I wanted learned.

Although discouraged, I was not defeated. I would try anyway, and I would start with the easiest part of the method. In my control class, we discussed rules and reasons and applied them to sentences everyday. I also gave a ten-point quiz every day and recorded the scores. In my experimental class after the first week, I began the class with a slow-tense-relax body exercise, followed by the mind relaxing exercise given in *Superlearning* and available on tape as "The Superlearning Exercise Cycle, The Art of Learning," Body/Mind Relaxation (1979) from Superlearning, Inc., using a suggestion of a seven-story house, imagination of the color spectrum, and concluding with positive suggestion that learning was possible. Except for the relaxation exercise at the beginning of the class, I did everything in the same way, including the daily quizzing at the end. Daily work was identical in scores, 85 percent in both classes. However, I did notice an immediate difference in attitudes: the control class habitually complained that the work was "too difficult," practiced soldiering, "let's cover less ground," and sabotaged attempts to proceed and move on with new information. The experimental group was always positive, open, and supportive. Students daily were kind toward one another, volunteered to help one another understand, and were concerned for the physical and emotional welfare of their classmates. For me, it was a joy to be there and to sense all of the good feelings that were like a palpable presence in the room.

My own attitudes throughout remained neutral about these methods. I did not actively practice positive suggestion; I did not declare that the methods would make a significant difference, but instead I actively said, "I am experimenting. I have no idea whether this will help you learn any better or not." This neutrality was fueled too by knowing there were no differences in daily scores, even though there were visible differences in emotional atmospheres.

At the end of the ten-week term, the results of a 100-point comprehensive final were:

Table I

	Average Final Score	Attrition
Fall 1979 Control Group n=20 (without relaxation exercise)	67%	50%
Experimental Group n=20 (with relaxation exercise)	77%	50%

Note: All subjects were adults.

I noticed that there was an obvious difference between 67% and 77%, but I was not content with achieving a mediocre success. I needed more confidence in using these methods and felt I could have no honest conviction unless I had proved it to myself as a learner.

I decided to try a Spanish class at the Lozanov Learning Institute, 8575 Gibbs Drive, Suite 206, San Diego, CA 92123. If I could actually gain fluency in a foreign language, I would be convinced since I never gained fluency in French, Latin, or Old English. In three weeks I had such magnificent success ("A Teacher's Experience of Being a Suggestopedic Student," *JSALT*, 1980, 5(4)) that I knew I could succeed. My experience gave me a detailed confidence about continuing to use successful attitudes and procedures that I had employed in the past ("Why you   ." *JSALT*, 1981, 6(3)). I was equally excited by the idea of an orderly orchestration of successful techniques that satisfied both my needs for spontaneity and organization.

During the course of the next five years from fall 1979 to summer 1984, I experimented with using all of the features of SALT and Lozanov methodology that I understood, using and eliminating one feature or another and recording the results. (See Table II.)

My first task in setting about to achieve these results was to find or create an appropriate text. The usual grammar handbook or workbook by this time seemed to me doomed to failure for the following reasons. First, conventional grammar approaches use only the language of the left hemisphere, namely, rules presented in abstractions, in adult vocabulary, and in adult syntax; the left hemisphere can understand this mode of presentation, but--more importantly--is also engaged in short-term memory. This short-term memory function easily accounted for my earlier failures to have students learn. Abstractly presented information is quickly erased by the left-brain

Table II. Final Scores from Comprehensive Objective Final

Term	N	Ave. Score	Attrition	Features Used
1980 Fall	59	89%	27%	* Intro. decoding * Music concerts (played loud) * Dramatic readings * Dialog games * Positive suggestion * Class names
1981 Winter	38	88%	32%	
1981 Spring	68	81%	46%	
1981 Fall	69	82%	39%	* Same as above but * eliminated dramatic readings
1982 Winter	48	86%	37%	
1982 Spring	39	80%	31%	* Same as above but eliminated dramatic readings and class names
1982 Fall	42	82%	30%	* Same as above * Eliminated dramatic readings
1983 Winter	53	82%	26%	
1983 Spring	47	85%	39%	* Diminished time spent on decoding explanation * Turned down volume on music concerts to dentist's office level of softness
1983 Fall	69	83%	8%	* Intro. decoding * Music concerts soft * Dramatic readings * Dialog games * Positive suggestion * Body/Mind Relation, Exercise in one class per week
1984 Winter	33	85%	0%	* Same as 1983 Fall * Used relaxation exercise only once during term at the outset of the class
1984 Spring	31	85%	22%	* Same as 1983 Fall
1984 Summer	19	91%	10%	* Same as 1984 Winter

Did an approach exist that encoded information in right-hemisphere terms? That is, did a book even exist that used emotion, the syntax of a five-year old, the diction of a 14-year-old, different tones, pauses, rhythm, spatial properties, color, juxtaposition—the commonly known codes of the right brain? I knew from my graduate studies in English literature that 17th century grammars did use rhyme and rhythm, poetic, short phrasing, and literary devices that encouraged mental imaging. However, grammatical rules had changed since the 17th century, so I could not simply reprint an old text. I could, however, use the 17th century idea as a model and update the information for modern needs. I had also been exposed to Lozanov foreign language texts which shared the literary imaging of the older texts. I thought I could create a useful hybrid out of both Lozanov and 17th century models.

So I created a text, Grammatica Unexpurgated, which used a science fiction flavoring to present abstraction in concrete images. In the process of creation I wondered whether I should place most of the information I wanted retained on the right half of the page or the left. I thought back through my experiences of learning Spanish suggestopedically. It so happened that the Spanish script was placed on the left half of the page, the English translation was placed on the right.

What did this use of space suggest in view of split-hemispheric research? My deductions and experiences suddenly coincided. I had learned to speak Spanish quickly and easily and without being slowed down with mental translation. Either deliberately or by happy accident the English gloss had been placed on the side of the page that went into the short-term part of the left hemisphere. Perhaps the gloss was useful only initially to make sense of the Spanish, was quickly erased by the left-brain, and the student was left with only the Spanish in the long-term reserves of the mind.

So in creating Grammatica Unexpurgated, I placed most of the useful information on the left-hand side of the page, in story form, with short phrases, in concrete diction, with a flavoring that would appeal to the child part of the adult mind.

The text, Grammatica Unexpurgated, translates the rules and formulas of grammar and sentence structure into imaginative story form. Anyone comparing an essay to a story will be aware that a story is easier to remember than an essay even though they discuss the same issues. An essay emphasizes the disembodied voice of abstractions. A story gives an abstraction a palpable body and form. My intention was to give abstract classifications concrete identities where appearances of characters, behaviors of characters, and the language they use are reflections of traditional definitions and practice. As a plot in itself incidentally functions as mnemonic device, characterization also acts as an aid in memory providing a network of fanciful associations. Beyond fantasy, I provided realistic and lighthearted explanations for the existence of grammatical rules that handbooks neglect to mention.

The information I drew on came from my graduate studies and experience with Old English and Middle English as well as histories of the English language. My experience in using handbooks in the classroom led me to believe that students want explanations: they would like to know the reasons why.

In writing out theoretical explanation and integrating it with story, I wanted to address the adult mind and the adult mind's need for logic. At the same time, I wanted to give heed to childlike needs for play. Those who practice purely Eastern European variants of the method leave out theoretical explanation. Their reasoning is that philosophizing blocks learning.

My position is different. I think that philosophy, or exploring the reasons why, can be a kind of play. There are those who read Plato for entertainment. The reasons are easy to understand. Socrates enjoys what he does; he takes pleasure in explanation. My attitude is the same. Explanation can be a pleasant game. Logic, analysis and classification are the playground of adult thinking. And when these procedures are presented positively, they are received positively. Nothing about the mind is difficult, and nothing about grammar is difficult.

That is not to say that mental life and grammar are uncomplicated. Both are complicated. The attitude that says, "This subject is difficult," fosters a negative barrier against the subject. But attitudes that say, "The subject is just as complicated as society and just as meaningful," make for powerful positive suggestions in favor of the richness of the subject.

Anyone reading a prescriptive grammar will run into apparent contradictions in rules. In contrast, this book's prescriptive grammar explores differences in formal and informal usage. Contradictions are simply matters of choice. In *Grammatica* I have not "expurgated" the complexities of choice. Instead, I have faced the complexities of choice by choosing to say something formally or by choosing to say something informally as a matter of social context. This reasoning is a basic part of the "Grammatica Unexpurgated" story line.

Students said almost daily that they enjoyed the classes, enjoyed the text, mentioned their other grades were improving in other subjects, and wished all their teachers were using these techniques. I, as a teacher, too, loved coming to class, was never nervous, and found the students eager to learn, mutually supportive of one another, and confident enough to challenge the teacher to find out if he were "on his toes." He was and loved the experience of confidence behind the challenges.

First Class: I hour and a half

The first class was spent in introducing my authority and interest in teaching as well as assigning class names. I follow Lozanov's notion that students relax under the influence of a person who they feel loves his profession, the people he deals with, and who knows what he is doing. I said, I am Dr. Steve Cooter. I have three degrees in English, a B.A., M.A., and Ph.D. I am one of those people doing exactly what they ought to be doing. I am teaching and I love it. I have taught for 16 years and have liked it all: the University of California was a good place to teach, the University of Wisconsin was better, and Chemeketa Community College is the best of all three. Why the best? The teachers on the campus CARE that students learn and I respect that. The students also care more. You are in an environment of people who want to succeed and teachers who want you to succeed. And you will. The reason why you have not succeeded in the past is because you thought grammar was difficult. The only difficulty with grammar is that it is simple, and the people who fail to learn it are simply much more intelligent than the people who have written the books for centuries.

What I am going to do in this course is to use a methodology that has consistently produced classroom scores over 90 percent. There is no reason why everyone cannot make an A. And you not only will remember everything through the final exam, but you will retain what you know permanently. I guarantee everyone an A who attends every class, is always on time, and completes all the reading and writing homework. I can make that guarantee because I've read all the statistics on the method and know the procedures.

I also know that the procedures work because I've tested them on myself. I learned Spanish, two years of Spanish in six weeks; this is significant to me because foreign languages were my worst subject, and I succeeded. I learned an active vocabulary of over 1300 words, and I can still use them months later. Now this class has a vocabulary of grammar and punctuation, and the terms and skills you will learn are not as big as 1300 words. You can all do it.

Now from this time forth I am going to assume a class name. I want you to refer to me as Dr. Author because I am the author of the text you will be using. "This name will remind me of my role as teacher and give me a slight cushion between who I am as a person and the role I play as teacher. Your class names will do the same; they will encourage you to have a fresh start, you will have new eyes and a new identity. You are to play the role of student and have a good time learning. With a new name, you will not have to worry about guessing or making mistakes. I want you to try, to make mistakes, and to learn. If you are afraid of making mistakes you cannot learn. So I invite you to try and not to worry. I will do the worrying. I will make mental notes of what you need to know as you speak and write and simply bring up what you need to learn as often as necessary until you get it. I will use lots of repetition because there is usually a delay before you can use what you read and hear.

The first time you hear something you almost register it. The second time it's more familiar. The third time familiar. By the twelfth time, the information is easy to understand and reproduce.

The class names I typically used in one class were names for sentence structures and punctuation marks

Mayor Fragment
Ms Phrase
Santa Clause
Life Sentence
D G Compound
Super Complex
Simple
Lady Dependent
Lady Independent
Professor Period
Comma
Ms Dash
Apposition
Miss Function
Grammar
Dr Singular

In the second class I used grammatical terms

Action
Being
Linking
Mr Quotation
Ms Mood
Lady Possessive
Mr Conditional
Sir Adverb
Ms Verb
Mrs Predicate
Mr Article
Preposition
Geritol Gerund
Professor Participle
Master Noun

In my third class I used some of the characters in the text

Sherlock
Stone
Queen
Princess
Customs Officer
Parentheses
Color Form
Sorcerer
Commander
Police Robot

I placed the names on a chart the first day with the full initials of the students real names following them I also brought the charts to class placed them on the blackboard for two weeks and used the chart for keeping role until all the names were second nature The students liked the names I liked them as well--everyone existed in the present Past failures were not connected with these new names Both personalities and class names provided a network of associations for the terminology learned in the class and the new names provided a cushion between the fear of making mistakes and the usefulness of making mistakes to learn

Second Class: 1 hour and a half

I used the second class to have them take the final exam usually reserved for the end of the term I told them it was simply a classroom exercise that would serve as a total introduction to everything in the course I told them not to worry about anything simply answer anything they wanted skip over unfamiliar items and to guess freely We would correct the exercise right after they finished and they would hear some of the rules for the first time I gave them 45 minutes to complete the exercise Then I put on some relaxing classical music, "Reverie for Spanish Guitars," by Faurindo Almeida, guitar renditions of Ravel, Tchaikovsky, Brahms, Chopin, and Kreisler. I then told them they would find the music would take away the mental fatigue the test created as well as relax them for their first exposure to the whole of the terminology of the course. I then spent 45 minutes simply pointing out the right answers, saying I would stop and briefly explain any item they wanted an explanation for. They corrected their own mistakes and handed in the tests. I used the tests to identify the areas of greatest weaknesses and gave special emphasis to these areas, incidentally, as the term went on. One man scored in the "B" range of the 80's and I recommended he take an advanced writing course. The rest of the students typically scored from 10 to 40 percent. Some said they were discouraged. So I said, "The exercise merely proves that you need this course. By the end of the term, you will score perfectly or close to perfection."

I consistently said, "This information is very easy to learn. We all learn at different rates. You can expect a short delay between now and when the information will be comfortable and usable." In creating the final exam, I made it comprehensive for a basic writing course and--unlike other final exams--full of positive suggestions about life and learning. Any casual perusal of a conventional final in a conventional English class will turn up an amazing number of references to disease, broken bones, depression, war, famine, bad breath. These kinds of negative references alone may account for the creation of enough anxiety to interfere with success.

Third class: 1 hour and a half

As expected, the final exam exercise revealed some confusion over subject and verb/predicate agreement (with a plural subject) and also some confusion over the case of the "s" in the third person singular present tense. I introduced the correct practice as my introduction for the third class.

Introduction

I placed two sentences on the blackboard to illustrate subject and verb/ predicate agreement.

A cat and dog are seldom friends.

Taste differs in entertainment.

I mentioned the definition of nouns briefly. Nouns mean persons, places, things, ideas, names. The subject of a sentence is usually the first noun or nouns named in the sentence. So I asked them to identify the nouns named in the sentence.

A cat and dog are seldom friends.

This was easily glossed.

n n n
A cat and dog are seldom friends

Then I asked what were the first nouns named the solution was easy and they identified the subjects

n n n
A cat and dog are seldom friends
s s

What was the verb? I said the verb meant or referred to either a state of being or an action and made the subject sense or act or be Are was easily identified as a being verb that made a statement about the subject and made the subject be something When this didn't work, mentioning that the verb changes tense always worked

n n v n
A cat and dog are seldom friends
s s p

So subjects and predicates agree If the subject is plural then the verb/predicate is plural I said Then we go through the next sentence

Taste differs in entertainment

Taste was easily identified in the first sentence as the first thing named and both as a noun and the subject

n
Taste differs in entertainment
s

What was the verb/predicate? Differs must be the verb/predicate Differs was recognized as a clear action or being word and it energized and made a statement about the subject The students wanted to know why the verb had an s on it One student said an s was associated with plurals True, I said, in nouns But not in verbs I wrote the paradigm on the board--

Singular	*Plural*
I differ	we differ
You differ	You differ
John (he, she, it) differs	they differ

The one verb form with an s is in the third person singular Someone said, I don't understand I suggested, You will We will return to it later You have now heard it once You will hear the idea many times

Now it's time for you to hear the same information highlighted with music

Concert Lecture

I taped the concert lectures in advance. And I taped them for two reasons: biofeedback research indicated that Americans generally believe in prescriptive approaches. They believe in pills, so pills are prescribed. Americans trust machines and mechanistic devices. One of my reasons was to play into cultural expectations. My other reason was to be good to myself. If I taped the lectures in advance, I would create a breather for myself during the class hour. And I--too--could get the benefits of relaxation right along with the students. I thought it would extend my energy over a rough working day. After all, I wanted something not only pleasant for my students but for myself. And it has been. Secondly, I got to observe my own voice and be objective about my role.

I have also been asked if there were any noticeable effects on me. Perhaps I would become overdosed on music, toning, and pausing. I was concerned. I looked for effects. The first effect I noticed was I felt a part of the class. I, too, was a member of a group, listening and even enjoying my own voice. Secondly, my energy was better than it had been in 16 years of teaching. I easily got through the workday. After two weeks of these kinds of classes, I started waking up after four hours of sleep at night. I was fully awake and alert. I remembered my dreams. The concerts symphonies of the week were playing through my head. I knew I was alive. I felt good about being awake. This happened then for ten weeks straight. At first, I simply experienced this extra time of being alive. I wondered if it were normal. Then, I tried using the time of being alive. I would remain awake and alert from 2 to 4 a.m. So I read. I read 50 books during those mid-morning hours. Sometimes, I read. Sometimes, I enjoyed extending the time that I knew I was alive. I feel these consequences on me were positive. I've extended my life and the time I have to do what I want to do with my life--to learn. Although the interrupted sleep no longer continues as a daily experience, my energy levels continue high.

How do you do a concert? It's easier simply to hear one example and then to imitate it. That's what I did. The easiest way to do it is play classical music a few times and read along with it. I normally used Tchaikovsky's "Sleeping Beauty Ballet" for the first reading. I let the musical introduction go for two minutes. Then I whispered the first line and paused a few seconds; then, I raised my voice for the second time. The whisper is a right brain code and activates the unconscious side of your mind. The louder, authoritative voice has the same effect. Pausing, itself, is a right brain activator. I simply alternated one phrase of whispering with a pause and a second phrase of louder speech. I quickly became comfortable with the pattern. I began to have a good time. I was the disc jockey of the mind, awakening the sleeping giant of the unconscious, the reserves of long-term memory, feeling, and the subdued child facet of everyone's personality. Contrary to Lozanov teachers, I felt amusement and intrigue about the whole process. It was not a grandly serious business for me or my students but a delightful form of intellectual play I was playing and having fun If I felt like laughing I laughed The more serious I became the funnier it sounded The effects on students attention is astounding Attention is both focused and intense They are right there hanging on every word listening for the changes pleasantly surprised and experiencing every word as if it were an actual concrete experience The experience is like having a movie theatre of your own playing in your own mind Just why this is is fascinating in itself

As the right brain awakens the two halves of the mind are awake at the same time Normally only the left brain is fully awake during the day So we act and read and write normally with only our reason our critical abstractions We all know this to be like robot behavior--as if only half of ourselves were alive In this left brain dominated consciousness nothing seems to be particularly important everything is cut-and-dried so- what-come-off-it it is a way of living that is dominated by a hyperactive parental attitude by negativity and mechanicalness But as you experience the music the toning and the pausing the whole person is awake and alive and well It is easy to see why accelerated memory and creativity are possible under these circumstances

This first concert normally features romantic-emotional music because its intention is to awaken the emotional side of our minds and the seat of long-term memory My choices in all music selections were based on intuition I chose pieces that I found personally moving

The second concert repeats the materials of the first I have chosen Bach's concertos simply because they suit my intuitions I let the music play for a couple of minutes and begin reading in my normal voice with my own natural sense of drama and emphasis

Bach or any Baroque music has an intellectual left brain emphasis The right brain is still kept awake by the rhythm itself but this time the left brain is the star receiver It's very comforting and assuring and again the visual theater plays in the mind The procedure I followed was to have the students close their eyes (I did too) and to actively picture the words as real experiences

Dramatic Reading

I followed the two concerts with a dramatic reading by the students I used one male student and one female student for variety in tone and re-emphasis of the right-left brain differentiation I followed Carl Jung's cues on this procedure The unconscious is female the consciousness is male especially as Eric Neuman Jung's student in *The Origins of Consciousness* (1954) explains The oral reading by students obviously provides simple repetition too

Dialogue

I followed the dramatic reading with simple dialogue interaction. One student would say to another, "What do you know about nouns?" Another student would reply. I acted as coach and prompter. After a while, other students acted my role. I kept up the dialogue through six sets of students with twelve repetitions of definitions and examples. All of this was oral. If someone made a mistake, I would volunteer the correct answer in a whisper. I did not use the word "mistake"; I simply said the correct word.

I ended the class with, "You've all done well. If you are unsure, just keep guessing."

Fourth Class: 1 hour and a half

I started the fourth class by placing a single sentence on the blackboard that was chosen for two reasons: the sentence would review the concepts of nouns, nouns as subjects, verbs and predicates, and the sentence's content was created to make a positive statement about relaxation and learning. The sentence was:

Because students felt good, the whole class remembered the definitions.

I told the class the purpose of the sentences was to review what they had been exposed to before. I had told them to read a story version of grammatical rules that presented nouns/subjects and verb/predicates as characters whose physical appearance concretely resembled their definitions and functions. The students had read the story as homework, once late at night and once early in the morning, and had done this reading in advance of the class. The homework suggestion was based on Lozanov's findings that two exposures to information at these optimal times for study produced 80 percent passive recognition the following day. My attitude about the homework was presented positively and with conviction. I was not playing the role of impersonal experimenter.

I played the role of the teacher who knew the results of the published Bulgarian research because he had read it and who knew the homework times worked for him because he had successfully experienced them as a student learning Spanish. What some American experiments had attempted to minimize, namely, the atmosphere of expectation created by the incidental "demand characteristics" of the experimenter (s/he finds what s/he expects to find) I attempted to maximize. The placebo effects of methods are intensified by the teacher's own positive attitudes.

I found that my own positive convictions immediately created a relaxed atmosphere in the class. The faces of the students were bright and expectant, postures were relaxed rather than rigid, and the tones of interchange were kind, caring, and interested. The class was a joyful experience to go through.

I asked one student what he knew about a noun. Master Noun what do you know about nouns? Laughter. The laughter was caused by the joking coincidences of the student's class name and the task and partly because I stressed the word Noun when I called on the student. Master Noun replied. A noun is a person place or thing. I asked. Is a noun anything more? Then I said. It's okay for other students to help and make additions. this is a game. Another student stuttered I de a. Wonderful. I replied. (Incidentally this student stopped stuttering before the end of the term.) Another person chimed in. A noun is also a name for a person place thing or idea. Bingo. I replied and threw this student a ping-pong ball. The student's face lit up and he was perfectly delighted at receiving the ping-pong ball. I said. The ball is not a ping-pong ball. the ball is a MacGuffin. A MacGuffin doesn't mean anything. but everyone wants to have one. Laughter. I had learned the use of balls in Lozanov classes at the Lozanov Learning Institute in San Diego.

In San Diego the use of balls. beach balls. puppets, stuffed animals. telephones had been used to create the atmosphere of childhood. its fun and its suspense. If only one student gets to hold a puppet everyone else wants to. The use of objects from play does create a gamelike attitude. decoys attention away from nervous inhibition. and acts as both emotional suspense and anticipated reward. All of these observations are obvious to all the students. feelings and motives of classmates become visible to each other and students discuss them during class breaks.

After defining verbs/predicates and subjects in a similar way. we went through the sentence on the board for identification of examples. All of these behaviors were behaviors I would test for later. the students did orally what they would later do on paper.

This exercise was followed by a poster game. I placed one newsprint poster on the left side of the blackboard. I used a green felt marker to write the word noun. On the right side I placed the word verb/predicate in red.

I then. asked for an artist to draw visual illustrations for a noun. One student drew a stick figure for a person. a plant for a thing. a mountain for a place. and then stopped and thought about it. At this point the class was intently involved in the whole process and drama of the creation. One suggested a light bulb for an idea. another a cartoon figure with a bubble above an animal's head. another suggested a label on a can of soup for the concept of name. A similar process took place for the creation of illustrations for verb/predicate. and this time with many loud. good natured suggestions from the rest of the class. These were all adults from 18 to 35.

I had borrowed the use of poster games from the Lozanov class as well as the idea from Georgi Lozanov's Suggestology (1978). As far as written accounts are concerned. the rationale was to create circumstances that recreate the more favorable circumstances of childhood where memory and learning were uncontaminated by negative barriers to learning. That atmosphere is plainly observable. I also think the use of visual illustrations are memorable in other ways: 1) the games encourage active participation of the whole person, the feelings of the class, and 2) the spatial character of form and color are more easily and permanently stored in the right hemisphere in the same way that the face of an old acquaintance is more easily recalled than the name of the person. Feeling and space can therefore activate the long term memory. Whenever the student wishes to recall a definition, the whole circumstance of the poster, including the drama of its creation, do help recall the abstract definition; the abstract information is thereby associated with a rich complex of concrete experiences. The more associations there are the more avenues of recall are later possible.

In order to counter the weaknesses in written reproduction noted by some teachers in teaching grammar and spelling practices, I decided to use the behavior of writing both inside and outside the class. Some have noted that Lozanov techniques were orally successful but not so successful in traditional contexts that demanded knowledge of written spelling and punctuation. I tried to balance both written and oral practice. It may seem unusual that the old spelling bee was an oral performance and did not easily transfer to written practice where it was actually useful. Perhaps the obvious is never obvious. If students are to be tested in writing and make use of written grammar in writing contexts, then they should practice in the same way.

Outside of class, advance homework was to write a paragraph describing their experience of registration. I asked them to pretend that registration was actually taking place as they were writing, in the present, and to use the third person singular as often as possible, as if they were watching another person. My intention was to uncover any uneasiness about the spelling and use of an "s" in most third person singular verb forms. It would also be an occasion to discover any problems with subject-verb agreement in both singular and plural forms.

I asked each student to read a paragraph orally to the class. I found something to praise or comment on in each reading: an imaginative use of an example, a clear sequence of events, clear statement of an opinion, the use of metaphor. I then asked for a second oral reading. This time I made mental or written notes of subject-verb agreement. I praised one correct example of a singular subject-verb agreement in a sentence. I also praised one example of a correct plural subject-verb agreement. I repeated the rule after each example: "Good. You have a singular subject with a singular verb/predicate." "Good. You have a plural subject with a plural verb." I called no attention to errors. But I made written notes of two errors. After the readings were finished, I simply wrote down the examples on the blackboard and wrote out the CORRECT practice.

I caught the eye of the student who made the error as I talked about the sentence. Then after the correct sentence was discussed, I intentionally created a singular subject with a plural verb and asked if it were correct. One student volunteered the correct practice and explained the rule. The word "error" or "mistake" was not used.

Later on, I did use the word mistake in a positive way. "Yes. That's a good mistake; it will help illustrate a point we need to learn." I kept the format of the class the same each week.

One Class

I. Brief Introductory Example
  A. One sentence both reviewed old material and introduced new information.

II. Dialogue Games
  A. Between one student and another on the introduced/reviewed material.
  B. Between teacher and student on the introduced/reviewed material.

III. Concert Lectures
  A. Tape recorded romantic music with story examples, paused with varied tones.
  B. Tape recorded Baroque lectures in ordinary sentences, slightly dramatized.

IV. Dramatic Reading
  A. One male student
  B. One female student

V. Dialogue Discussion
  A. Of the story
  B. Of the rules

VI. Advance Homework Reading
  A. Before sleeping
  B. Just after waking

Second Class

I. Brief introductory example of one sentence illustrating new material/reviewing old.

II. Dialogue Games
  A. Student-student with teacher observing and commenting.
  B. Student-teacher with other students observing and commenting.

III. Poster Games
  A. Newsprint illustrations by one student.
  B. Class acts as source of suggestions.

IV Oral readings of advance written paragraphs on assigned topics
  A Students and teacher listen and praise good features
  B Teacher takes mental and written notes of problems
  C Teacher corrects after readings are finished and emphasizes the correct practice rather than the mistake

V Assigns reading for homework
  A Use or create narrative story from presentations that transform abstractions into vicarious concrete experiences

The strictness and predictability of the class structure were comfortable to teach by and learn in It also seemed to encourage creative participation by both teacher and student The analogy that occurred to me was this The actors who follow similar plots in situation comedies begin to freely play with their own dialogue and perceptions The experience is enjoyable and the learning rates are gratifying

In attempting to evaluate differences among average scores where features of methods were used or eliminated I noticed little that suggested a key feature that would be essential to include I did notice that dropping class names seemed to produce a rigid nervous classroom atmosphere but had no dramatic result on learning the information itself Several features used together though affirm claims that better learning results certainly 80 percent is more gratifying than 70 percent I also noticed that there was an exact correlation between attendance at a body-mind relaxation session and attrition no student attending a body-mind relaxation exercise ever dropped the class even though some of the students were plagued with broken bones, kidney failure or family troubles I felt too that the scores would have been five points higher had the community college students not so often been bothered with changes in work schedules illness of their children or accidents that prevented full attendance and exposure to presentations that made things easily possible for those who were able to be there

*** ***

References

Cooter, S (1980) Brain lateralization and Lozanov concerts *Journal of the Society for Accelerative Learning and Teaching, 5* (4)

Cooter, S (1980) A teacher's experience of being a suggestopedia student *Journal of the Society for Accelerative Learning and Teaching, 5* (4)

Cooter, S (1981) WHY YOU didn't learn and how you CAN *Journal of the Society for Accelerative Learning and Teaching, 6* (3)

Lozanov, G (1978) *Suggestology and Outlines of Suggestopedia.* New York Gordon & Breach

Ostrander, N & Schroder, S (1979) *Superlearning.* New York Delacorte Press

Smirnova, N.V. (1975). Process in experimental instruction in the course of Suggestology at the V.I. Lenin Moscow State Pedagogical Institute. *Suggestology and Suggestopedia, 1* (3).

* * *   * * *   * * *

L Enseignement et la Grammaire Anglaise et les Reglements de Ponctuation et leur Pratice. Une Etude de Cinq-ans de Methodes SALT Suggestopedie

En cinq-ans d utilization de methodologie SALT-Lozanov, noms de class, decodages, lectures de musique-concert, de lectures dramatiques par les etudiants, de jeux de dialogue, d exercice de relaxations, et de suggestions positives, il est entierement possible d apprendre l information abstrait de la grammaire, les reglements de ponctuations, et l applications d acquerir une langue etrangere. Les trois premiere semaines du semestre les etudiants conversait en grammaire aussi courament qu une personne pourrait discuter la meteo. Vers la fin du semestre de dix semaine, les etudiants n etait non seulement capable de parle courament, mais exacte et au dela du niveau de 80% mesure par des examins objectif. Quand Monsieur Ron Ennis a demander si ce genre de connaissance avait de la profondeur, je me suis rappelier que le createur-parent de cette classe de grammaire avait assister un jour vers la fin du semestre. A mon grand plaisir, les etudiants enseigne avec ces methodes etait plus vite et plus exacte que le vieux systeme grammaire-professeur-visiteur qui a inventer cette classe.

Lehren von englischer Grammatik, Satzzeichenregeln und deren Praxis: eine funfjahrige Studie von SALT und Suggestopadie Methoden

Nach funfjahriger Anwendung der SALT-Lozanov Methode (Klassennamen, einfuhrende Dekodierung, Konzert-Musik Teil, dramatisches Lesen durch Studenten, Dialogspiele, Entspannungsubungen und positive Suggestionen) ist das Lernen der abstrakten Information von Grammatik, Satzzeichenregeln und deren Anwendung genau so leicht moglich wie die Aneignung einer Fremdsprache. Bereits nach drei Wochen eines Semesters unterhielten sich die Studenten genau so fliessend uber Grammatik, wie andere Leute uber das Wetter. Gegen Schluss des 10-wochigen Semesters waren die Studenten nicht nur versiert im Stoff, sondern erzielten auch eine Genauigkeit von 80% des Materials oder mehr in Objektivtests. Als mich Ron Ennis fragte, ob diese Kenntnis des Stoffes grundlegend sei, erinnerte ich mich, dass der Schopfer dieser Grammatikklasse den Unterricht gegen Ende des Semesters einmal besuchte. Zu meiner Freude stellte es sich heraus, dass die Studenten, die mit dieser Methode gelehrt wurden, schneller und prazieser waren als der alte Grammatiklehrer/Besucher, der die Klasse erfunden hatte.

Enseñando Reglas y Practicas de Gramatica y Puntuacion Inglesa: Un Estudio de Cinco Años sobre SALT y Metodos Sugestopedicos

En cinco años de utilizacion del metodo SALT-Lozanov, nombres de clases, descifraje introductorio, lecciones con musica-concierto, lecturas dramaticas por estudiantes, juegos de dialogo, ejercicios de relajacion y sugestion positiva, puede que sea posible aprender informacion abstracta de gramatica, reglas de puntuacion, y applicaciones tan facilmente como ha sido posible adquirir un idioma extranjero. En tres semanas de un curso, estudiantes conversaban en gramatica tan fluidamente como la mayoria de la gente discute el tiempo. Al final del curso de diez semanas los estudiantes no tenian solamente fluidez, sino que tambien tenian una precision al nivel de por lo menos 80% en examenes objetivos. Cuando Ron Ennis pregunto si este tipo de conocimiento tenia alguna profundidad, recorde que el padre-creador de este curso de gramatica atendio una clase hacia el final del curso. A gran gusto mio, los estudiantes enseñados con estos metodos eran mas rapidos y mas precisos que el gramatico-profesor-visitante viejo que invento el curso.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(2)

Intelligence's Secret: The Limbic System and How to Mobilize it through Suggestopedy*

Luiz Machado de Andrade
University of Rio de Janeiro

Abstract. The author presents and documents his argument that emotion harmoniously integrated with cognition is the key to accelerated learning. Suggestion is not needed for this purpose, but should be studied to avoid misuse in education.

Introduction

The dwarf sees farther than the giant, when he has the giant's shoulders to mount on (Coleridge, *The Friend*, I. 8)

In reality, the subject matter of my presentation is what we can consider to be the secret of intelligence, that is, the LIMBIC SYSTEM as described by psychoneurophysiology studies today.

I have replaced the word suggestopedia in the original title by emotopedia. For the time being, let me tell you that I came to the conclusion that anything related to suggestion applied to education is not only inadequate, but also tremendously dangerous, as I will demonstrate during the minutes I have the pleasure to be with you. So the title of my presentation becomes Intelligence's Secret: The Limbic System and How to Mobilize it Through Emotopedia.

I would like to start by quoting two passages of a book entitled Fisiologia das Emoções (*Physiology of Emotions*), published in 1975, written by Dr. Raul Marino Junior, a Brazilian Full Professor of Neurosurgery, at São Paulo State University in Brazil, and Director of Psychoneurosurgery in the School Hospital of the same university. Most of the book treats the limbic system and the author says on page 1: O estudo das emocões, da afetividade, da motivação, do comportamento, da memoria, do aprendizado, do intelecto e de outras funções superiores do cerebro foi praticamente revolucionado sobretudo na ultima decada, em que a Psiconeurofisiologia trouxe a luz tal soma de novos dados, que a Psicologia e a Neurologia de ha poucos anos jamais sonharam conhecer. (Translation: The study of emotions, of affectiveness, of motivation, of behavior, of memory, of learning, of intellect and other higher brain functions was practically revolutionized chiefly in the last decade, in which Psychoneurophysiology brought to light such a sum of new data that the Psychology and the Neurology of recent years had never dreamt of obtaining)

---

* Edited version of paper given at the first European SALT conference, May 1984 in Stockholm.

Professor Marino also says on page 90 of his quoted book Somente ha algumas decadas se chegou a conclusão de que apenas o SISTEMA LIMBICO poderia preencher todos esses requisitos – o de substrato neural dos processos mentais das emoções, do intelecto, da motivação, do aprendizado, da memoria, do comportamento e de muitas outras funções cerebrais do mais alto nivel, que representam um elo essencial entre a mente e o corpo (Translation It was only some decades ago that we came to the conclusion that only the limbic system could fulfill all these requirements – the one of neural substratum of the mental processes of emotions, of intellect, of motivation, of learning, of memory, of behavior and many other brain functions of the highest level that represent an essential link between mind and body)

Let us see what Dr Paul Maclean, who introduced the expression Limbic system in 1952, based on the limbic lobe of Broca (1878) and who has developed the model of the triune brain, has written in the preface to Dr Marino's book about this Brazilian scientist Dr Marino, who has devoted many years to the study of the limbic system, is eminently qualified to discuss its anatomy and functions as well as its special role in the physiology of emotions. Moreover, as a neurosurgeon, he is in a particularly advantageous position to deal with the subject of psychomotor epilepsy, a dreaded disease that promises to shed more light on mechanisms underlying intense human affective states than any other clinical entity

Now that I have shown you the importance of the limbic system in the processes which constitute the background of my subject, let me go in search of the meaning of suggestion, since I have to demonstrate its inadequacy when used in education

In order to show you why educators should be aware of suggestology, the science of suggestion, and suggestopedia, education through suggestion, I will trace very briefly the history of suggestion back to the XVII century. In his work *Les Medications Psychologiques*, (The Psychological Medications) in three volumes, of 1919 (my copy of the second edition, 1925) Dr Pierre Janet reports (page 138) statements by Malebranche who, in the XVII century wrote about the communication contagieuse des imaginations fortes (Translation contagious communication of strong imaginations) and les personnes passionees nous passionent et font dans notre imagination des impressions qui ressemblent a celles dont elles sont touchees (Translation People dominated by a passion arouse passion in us and make impressions on our imagination resembling those by which they are touched)

After analysing the works by Maine de Biran, De Beauchene, Demangeon, Mesmer, Puysegur, Bertrand, Deleuze, Abbe Faria, Despine d'Aix, Charpignon, Perrier (de Caen), M Durand (de Gros), John Bovee, Dods, Manchester Braid, Milne Bramwell, Haidenhain, Prosper Despine, Mac Kendrick (from Glasgow), Dr Hart, Noizet, Munsterberg, Mesnet, Liebeault, Demarquay, Giraud Teulon, Michea, Macario, Baillif, Dr Pierre

Janet reports (page 148) that "Recamier 1821, Cloquet 1829, Oudet 1837, puis Ribaud, Broca, Follin, Gueraau, Vulpain, et en Angleterre Topham, 1842, Eliotson, 1843 et surtout Esdaile ont pratique des operations chirurgicales extrêmement graves, mêmes des amputations de la cuisse, en profitant de l'insensibilite determinee par le sommeil hypnotique et la suggestion." (Translation: Recamier 1821, Cloquet 1929, Oudet 1837 and then Ribaud, Broca, Follin, Guerinau, Vulpain, and in England, Topham, 1842, Eliotson, 1843, and chiefly Esdaile have made serious surgical operations, even in thigh amputations, taking advantage of the intensitivity determined by hypnotic sleep and suggestion). In passing, I would like to transcribe what Jane Bancroft tells us in her article "Suggestology and Suggestopedia: The Theory of the Lozanov Method", page 190: "Like hypnosis, suggestion is usually considered to be a part of medicine in Bulgaria (as in the Soviet Union). Suggestion is used in both hypnotic and the waking state by the doctor or psychotherapist and Dr. Lozanov, for example, has helped in painless surgical operations by using suggestion and/or hypnosis, instead of anesthetics."

Dr. Janet says (page 149) that around 1865 suggestion and hypnosis seemed forgotten as well as animal magnetism itself and were practically in the hands of charlatans for about twenty years until the studies of Charles Richet, published from 1875 to 1883 in the *Journal d'Anatomie et de Physiologie*, in *Revue Philosofique*, of Ribot and partially summarized in the book *L'Homme et l'Intelligence* (Man and Intelligence), of 1883, struggled successfully against simulation.

After describing the dispute between the schools of "Salpetriere" of J.M. Charcot and that of "Nancy", initiated by Bernheim, follower of Liebauld, at the end of the XIX century, Dr. Janet says, on page 178, that there is a very curious movement tending to use hypnotic suggestion in education and making a teaching procedure of it. He details some works by Guyau, Fouillee, Delboeuf, Berillon, M.P.F. Thomas, M. Bourdon, who claims for the application of the suggestive pedagogy to the various troubles of language and troubles of character (Revue de l'hypnotisme, 1897, p. 45).

Dr. Janet gives us information about suggestion and hypnosis in other countries, such as Belgium, Germany, Holland, Sweden (with the work of Wetterstand), Italy, England, the United States, Argentina and Russia. In this country he points out the book *On Hypnosis and Its Importance as a Therapeutic Means* by M. Bechterew, of 1894. (We have the book *Suggestion et son rôle dans la vie sociale* (Suggestion and its role in social life) by W.M. Bechterew, translated into French by Keraval, published by Librairie Alex Coccox, in 1910.)

Although the second edition of the book by Janet is of 1925, he makes only brief mention of Emile Coue and Charles Baudouin, both prominent figures in this topic of suggestion. Baudouin has published *Suggestion et autosuggestion, etude psychologique et pedagogique d'apres les resultats de la nouvelle ecole de Nancy* (Suggestion and auto-suggestion, psychological and pedagogical study according to the results of the new school of Nancy) (We have a copy of the third edition, revised and enlarged, published in 1922 and another of the 4th edition, with the title *Psychologie de la suggestion et de l'autosuggestion* (Psychology of suggestion and of auto-suggestion) improved and enlarged of the work *Suggestion et Autosuggestion*. We can affirm that, making the necessary terminology reduction, the work of Georgi Lozanov has nothing new that had not been previously studied by Baudouin. This author says in the preface to the first edition of his book: Je me suis surtout place au point de vue educatif (ce qui fait l'objet de ces pages a ete expose en des cours donnes a Geneve a la Faculte des Lettres e a l'Institut Jean Jacques Rousseau) c'est-a-dire que j'ai essaye de montrer comment, par une education facile, nous faisons d'un pouvoir latent un pouvoir efficace. C'est la surtout qu'il est utile de connaitre (Translation: I place myself chiefly on the educative viewpoint (the subject of these pages has been given in courses in Geneve and at the School of Letters and at the Institute Jean Jacques Rousseau), that is, I have tried to show how, by means of an easy education, we make of a latent power an efficacious power. This is what is chiefly useful to be acquainted with). As we can see the so-called potentialities are nothing new but Baudouin's latent power.

Continuing with the history of suggestion, now far from the work by Janet, we have the publication of *L'Education par la suggestion* (Education through suggestion) by Leon and Frederic Saisset, published in 1942, by Presses Universitaires de France.

With the publication of the book *Psychic discoveries behind the Iron Curtain*, by Sheila Ostrander and Lynn Schroeder, 1970, which is a journalistic report with a dose of sensation, the theme of suggestion in education is touched again. We say again because we have seen what Janet, Baudouin and Saisset wrote about it, and a long time before Lozanov. It was in the book by the American authors that most of us became acquainted with the work of Dr. Lozanov at the Institute of Suggestology, in Sofia, Bulgaria. At first I became enthusiastic about the idea of developing human potentialities and I believed that the same happened to Dee Dickinson, Gabriel Racle, Charles Gritton, Marilyn Ferguson, Allyn Prichard, Ray Benites-Bordon, Donald H. Schuster, Jane Bancroft, Charles Schmid, Peter Kline, Paul Hollander, Dean Held, Owen L. Caskey, Rosalyn Frank, Leonard A. Miller, Philip Miele, Carl S. Davis, Wil Knibbeler, Win Wenger, Susan Wenger, Harry Stanton, Fanny Saferis, Kay Kerr, Lester Kaplan, Sigrid Gassner-Roberts, Milla Bayuk, Tomimoto Amano, Ann D. Forester, Ann Robinson, Marion Geddes and the Society for Effective Affective Learning in England and many others who, like myself were under the impact of the news from Bulgaria and analysed the subject with a critical point of view.

I must confess that my capacity of evaluation was veiled by the enthusiasm of the possibility of mobilizing human potentialities, a subject I had been studying since the first years of the sixties. The book did cause an impact on educators, chiefly on language teachers

But later on after a profound critical analysis and considering the responsibility of my capacity as chairman of the International Association for Accelerative Learning I must declare that we should not adopt suggestology or suggestopedia and here I am offering the reasons and justify why On the other hand suggestology must be studied as a means of equipping people with training on how to be aware against ideas beliefs trends surreptitiously foisted on us

In 1975 the book *De la Suggestion* by Dr Hippolyte Bernheim deserved a new publication by Retz-CEPL Paris It is very significant because the first edition of this book had occurred 59 (fifty nine) years before since it was first published by Albin Michel Paris in 1916 It is interesting to point out that in the first semester of 1981 the seventh updated edition of *Hypnose et suggestion,* by Paul Chaucard was published by Presses Universitaires de France

The book *Suggestology and Outlines of Suggestopedy,* by Georgi Lozanov a publication of Gordon and Breach (a revised and updated translation of G Lozanov's book *Suggestology,* published in 1971 by Nauka i Izkustvo Sofia Bulgaria) was published in 1978

In the wake of the first book Sheila Ostrander and Lynn Schroeder and now with Nancy Ostrander, published *Superlearning,* in 1979 This book tends to be sensationalist It is not a scientific report on what is carried out at the Institute of Suggestology and also ignores everything which existed previously about the subject as if Lozanov had invented "suggestion" and its application in education The same happens to Jean Lerede in his book *Suggerer pour apprendre"* (Suggest to teach) 1980 who, in my opinion, could have made a profound study of the subject since as the Russian W Bechterew says in his book of 1909 La suggestion et son rôle dans la vie sociale la France est la patrie du mouvement dont est actuellement animee l'etude de l'hypotisme et de la suggestion (Translation France is the mother country of the movement by which the study of hypnosis and suggestion is presently encouraged)

The Meaning of Suggestion

Leon and Frederic Saisset, in the book already mentioned *L'Education par la suggestion* (Education through suggestion) say on page 19 Suggerer au sens plus general du terme, c'est agir sur autrui, non pas imposant une idee par commandement, mais en l'insinuant, en la faisant naitre par douceur persuasive et addresse, de tel sorte que celui que la reçoit ainsi puisse la croir sienne, nee spontanement en lui (Translation Suggest, in the most general meaning of the term, is to act upon someone else, not by imposing an idea through commandment but by insinuating it, by making it be born through persuasive and adroit mildness, in such a way that he who receives it this way can believe it to be his or hers, spontaneously born in him or her)

When we read such a definition we can't help being automatically transported in mind to the atmosphere of the novel *1984*, by George Orwell, a world where whole systems were created to control not only activities but also thoughts themselves. It is a very uncomfortable feeling.

It is very common to say and write that a person suffers a suggestion when he or she has an idea, adopts a belief, shows a trend without perceiving that this idea, belief or trend is in reality originated from a direct outer action, or someone's else will. This is the technical meaning we can deduce from the study of the history of suggestion, that is, that suggestion is the act through which an idea is introduced into somebody's mind without his or her consciousness.

We now see that the term "suggestology" and "suggestopedia" when applied to education are completely unacceptable, they are full of "negative suggestions" due to the technical meaning of the word *suggestion*. And this is also the meaning we find in present-day books, as for instance in Paul Chauchard's *Hypnose et suggestion*, (Hypnosis and suggestion) published by Presses Universitaires de France, seventh edition, first semester of 1981, where we read on page 4: "Tout homme qui detient ou croit detenir une verite a le desir bien naturel de le faire partager a ses voisins; il essayera d'obtenir leur assentiment volontaire, de les convaincre; en cas d'echec la tentation sera grande de ne pas respecter leur liberte et soit de les forcer par la contrainte a donner leur accord alors qu'ils gardent au fond d'eux-mêmes leur premiere opinion, soit de seduire leur pensee même, afin de les amener a leur insu a renoncer a leur idee. Telle est la *suggestion* qui ne s'adresse pas a la raison, mais au subconscient." (Translation: "Every man who has or thinks he has a truth has the very natural wish to share it with his neighbors; he will try to get their voluntary consent, to convince them; in the case of refusal, the temptation of not respecting their freedom will be great, whether to force them by constraint to give their approval, even if they keep at their bottom their first opinion, whether to seduce their thinking, in order to guide them without their knowing of it to change their idea. Such is *suggestion* that is not directed to reason but to the subconscious.")

The Inadequacy of the Terms "Suggestology" and and "Suggestopedia" When Referring to Education

We have begun to see the inadequacy of the terms "suggestology" and "suggestopedia" when applied to education.

On reviewing the articles published in the *Journal of the Society for Accelerative Learning and Teaching* from its first number to the most recent one which I received as a member of the society (Volume 7, no 2, Summer 1982), we come to that same technical meaning of suggestion. In one of the best studies I have ever read about suggestology, written by Jane Bancroft in the first volume, no 3, Fall 1976 of the *Salt* Journal, we read on page 190: "Before engaging in a philosophical and scientific discussion of suggestion and its effects on the unconscious. Dr Lozanov says that the phenomenon of suggestion exists in a wide variety of disciplines or areas. Suggestion is used, for example, in business, especially in advertising, to hit below the level of consciousness and encourage consumers to buy goods without being entirely aware of the reasons for which they are purchasing the products in question. Here we see that suggestion is used in that technical meaning. In volume 2, no 3 & 4, Fall 1977, we find the work by Allyn Prichard, from Iowa State University, with the title "A SALTy Interlude: Suggestion, Sight Words, Statistics and the Single Wing", we read on page 147: "Suggestion – that's the tool – that's the way in which we attempt to change a person's belief system." We have to pay close attention to what Harry E. Stanton, from Tasmania University, in the article "Suggestology or Hypnosis – It's all in the label", published in the *Salt* Journal, volume 3, no 4, Winter 1978, who says on page 251: "I feel he (Dr Lozanov) is not correct when he claims his system has nothing to do with hypnosis. The two approaches have so much in common that I feel it is really impossible to draw a line between them."

In his article "The key principal of Suggestopedia", published in the *Salt* Journal, volume 1, no 3, Gabriel Racle says on page 149: "Dr Lozanov discussed the twenty-seven most popular definitions, but the most interesting is his own: suggestion is a form of mental reverberation in which a special set-up for the development of the functional reserves of human psyche is created mainly by an unconscious mental activity." Through this definition we cannot come to a conclusion about the meaning of suggestion for Dr Lozanov, considering that the word has a technical meaning long established in the works of prominent writers on the subject. And further on this article Racle says also on page 149: "For Dr Lozanov, unconscious mental acitvity is the bearer not only of the darkest instinctive trends, but also of the automatic activities which condition any training and any development of man."

Jane Bancroft, in her article already quoted, "Suggestology and Suggestopedia: The Theory of the Lozanov Method", says on page 214 in volume 1, no 3, Fall 1976, of the *Salt* Journal: "Faced with a lack of scientific data on the one hand, and peculiar (i.e. non-Western) terminology, on the other, the West-European or North American researcher* is likely to have a negative reaction to the Lozanov thesis and by extension to suggestology and suggestopedia."

I don't accept this view. I don't want to believe that there are teachers and professors who would like to make use of suggestion in their classrooms in order to change the belief systems of students without their consent.

---

* I would say South American researcher, too.

We might admit the use of suggestology as a theory of communication People should be taught how not to be contaminated by suggestions which might try to control our ideas thoughts beliefs and trends

What teachers want is to mobilize their student s potentialities Chiefly in terms of education we have to avoid this kind of ambiguity We should not forget the three slogans on the white face of the Ministry of Truth in Orwell s *1984*: WAR IS PEACE FREEDOM IS SLAVERY IGNORANCE IS STRENGTH

I will now give another and definitive reason why the terms suggestology and suggestopedia are inadequate when applied to education even if ambiguously intended to express the mobilization of cerebral reserves

Prof Marino says on page 78 on his already quoted book O sistema limbico representa um centro de convergência a uma via final comum para os impulsos mais importantes e representativos dos meios externo e interno A maior parte das informaçoes que circulam atraves do sistema nervoso central e filtrada atraves destas estruturas de origem primitiva que devem arcar com pesada carga pois têm a função de proporcionar uma permanente adaptação do organismo a continuas mudanças desafios e stress do meio ambiente (Translation The limbic system represents a convergent center by a common final path to the most important and representative of the external and internal milieus Most pieces of information which circulate through the central nervous system are filtered through these structures of primitive origin which must bear a heavy load since they have the function of securing a permanent adaptation of the organism to continuous changes challenges and stress of the surroundings)

There are pieces of information that penetrating the limbic system (structures of primitive origin) can mobilize cerebral reserves not normally used It is not any piece of information Information is everywhere and where there is information there is suggestion This is one reason why we can say that what mobilizes cerebral reserves is not suggestion but a set of pieces of information that penetrates the limbic system

This is the phenomenon it seems that mental unconscious activity the suggestive phenomenon is this communication with the limbic system

In order to study without ambiguities the phenomenon of mobilization of human potentialities through the pieces of information which by penetrating the limbic system are able to activate cerebral reserves not normally used to give people a chance to self-actualization I propose here in this conference the term emotology from the Latin *ex*, out in the consequence of *motus*, movement *logos*, treatise and the suffix - *y*. The application of this knowledge to education is emotopedia with the Greek element *paideia*, education

The new verb *emotize* means: in a psychological state reached through equilibration (action through which the human system attains harmony between mind and body) voluntarily to make a mental representation of the result one wants to reach or the background for this result, with enthusiasm, with emotional fervor, without any vacillation involving the limbic system with which we communicate by means of images and act as having already obtained the result. *Emotize* is to mobilize the limbic system to activate cerebral reserves not normally used in order to attain rationally decided objectives. *Emotize* is not only the use of emotions but the use of the rational to define objectives clearly and translate them into mental representation using the auditive, visual and kinesthetic channels.

The new area of studies here submitted to your consideration opens a wide range of possible research without underlying ideas, without idelogical connotation.

I would like to have taken all these ideas and criticism to the Institute of Suggestology in Sofia. I would like to discuss it personally in Bulgaria but I was not permitted to do so. Taking advantage of this trip from my country to Sweden I tried, through the Bulgarian Embassy in Brasilia, to obtain permission to visit the Institute, however, the answer I got was that the visit was not possible because the Institute was undergoing modifications at the time (March 1984).

Conclusions

These conclusions are drawn from the work we have just presented and from researches into Psychoneurophysiology as reported by Dr Raul Marino Junior, whose book *Fisiologia das Emoções* (Physiology of Emotions) is a study of the limbic system, supported by a bibliography of the 143 works of specialists of the most advanced centers for these studies in the world. His conclusions are:

1. The limbic system, rather than the intellectual factor, is the main component of intelligence.
2. Not all pieces of information matter from the viewpoint of the mobilization of cerebral reserves, only those that penetrate the limbic system serve as a trigger for the utilization of reserves not normally used.
3. The pieces of information that penetrate the limbic system are those emotized. (The use of the verb emotize with the meaning described in the body of this work is proposed at this conference for the first time.)
4. Intelligence's secret is in the limbic system, the principal functions of which are:
   * autopreservation and preservation of the species (MacLean, Kuver-Bucy, Olds, Health).
   * the relations of the limbic system and the more lateral portions of the neopallium are related chiefly to learning, memory and intellectual functions (Fulton, 1953).
   * MacLean has demonstrated that the limbic system receives information from all intero- and exteroceptive systems and the elaborates it into emotional sensations.

- Besides maintaining the cortex aware, the mesencephalic area is intimately related to learning processes, conditioned reflexes and to all activities of the limbic system (Raul Marino Junior)
- thalamic nuclei play an important role in attention, learning and conditioned reflexes (Thompson, 1963)

As a consequence, the following points apply:

- The terms suggestology and suggestopedia are inadequate when applied to education.
- Suggestology must be studied so that people can learn how not to be victims of processes that come to control their minds.
- the study of how to mobilize the limbic system voluntarily to attain the objectives decided by the person himself/herself is the object of emotology (this term is proposed here at this conference for the first time).
- the application of the studies of emotology to education is emotopedia (The term emotopedia is proposed here at this conference for the first time).
- emotology and emotopedia should replace suggestology and suggestopedia when applied to education.
- accelerative learning is a consequence of the mobilizations of cerebral reserves not used normally.
- what teachers want is to mobilize human potentialities as an element of self-realization, to communicate with the limbic system to activate intellectual functions so that people can develop their creative-critical intelligence.

We must avoid any kind of deliberate manipulation of persons. Nobody has the right to deliberately get at the person underneath his natural defenses, working with the non-rational aspect of the person.

* * * * * *

References

Bancroft, W.J. (1976). Suggestology and suggestopedia: The theory of the Lozanov mehtod. *Journal of Suggestive Accelerative Learning and Teaching, 1*(3), 187-216.

Beckterev, V.M. (1910). *Suggestion et son role dans la vie sociale.* (Suggestion and its role in social life). France: Librairie A. Coccox.

Bernheim, H. (1975). *De la Suggestion.* Paris: Retz-CEPL.

Chaucard, P. (1981). *The Friend.* Ch. 1, p.8.

Janet, P. (1925). *Les Medications Psychologiques,* 2nd ed. (The Psychological Medications). Paris: Libaire F. Alcan.

Lerede, J. (1980). *Suggerer pour Apprendre.* (Suggest to Teach).

Lozanov, G. (1971). *Sugestologiya.* Sofia: Nauka i Izkustvo.

Lozanov, G. (1978). *Suggestology and Outlines of Suggestopedy.* New York: Gordon & Breach.

MacLean, P. (1954). The limbic system and its hippocampal formation in animals and their possible application to man. *Journal of Neurosurgery, 11*, 29-44.

MacLean, P. (1958). The limbic system with respect to self-preservation and the preservation of the species. *Journal of Nervous and Mental Disorders, 127*, 1-10.

MacLean, P. (1964). Man and his animal brain. *Modern Medicine*, 95-106.

Marino, R. Jr. (1975). *Fisiologia das Emoções* (Physiology of Emotions).

Orwell, G. (1950). *1984*. New York: Signet Books, New American Library of World Literature.

Ostrander, S. & Schroeder, L. (1970). *Psychic Discoveries behind the Iron Curtain*. Englewood Cliffs, NJ: Prentice Hall.

Ostrander, S. & Schroeder, L. (1979). *SuperLearning*. New York: Delacorte.

Prichard, A. (1977). A SALTy interlude: Suggestion, sight words, statistics and the single wing. *Journal of Suggestive Accelerative Learning and Teaching, 2*(3 & 4), 138-148.

Racle, G. (1976). The key principles of Suggestopedia. *Journal of Suggestive Accelerative Learning and Teaching, 1*(3), 149-163.

Saisset, L. & Saisset, F. (1942). *L'Education par la suggestion*. (Education through suggestion). Paris, France: Presses Universitaires.

Stanton, H.E. (1978). Suggestology or hypnosis: It's all in the label. *Journal of Suggestive Accelerative Learning and Teaching, 3*(4), 248-252.

*** *** ***

Le Secret de l'Intelligence: Comment Mobiliser le Systeme Limbique a travers la Suggestopedie

L'auteur porte-document et presente son argument que l'emotion integre harmonieusement avec connaissance est la cle pour l'apprentissage accelere. La suggestion n'est pas necessaire dans cet objectif, mais dôit être etudier pour eviter l'usage impropre en education.

Das Geheimnis von Intelligenz: Das Limbus-System und seine Mobilisierung durch Suggestopadie

Der Autor Prasentiert und unterlegt seine Behauptung, dass Emotion die harmonisch mit dem Erkennungsvermögen integriert ist, der Schlussel zu beschleunigendem Lernen ist. Suggestion ist zu diesem Zweck nicht erforderlich, aber sollte erforscht werden, um einen Missbrauch in der Erziehung zu vermeiden.

El Secreto de Inteligencia: El Sistema Limbico y Como Mobilizarlo por Medio de Sugestopedia

El autor presenta y documenta su argumento que emocion integrada armonicamente con cognicion es la clave de aprendizaje acelerado.

Sugestion no se necesita para este fin pero debe ser estudiada para evitar su abuso en enseñanza

J. of the Society for Accelerative Learning and Teaching 1986, 11(2)

Suggestopedia Research in the GDR: A Personal Report

Sigrid Gassner-Roberts

University of Adelaide

Abstract. The author details her visit to suggestopedic classes in East Germany. Her observations reflect similarities in GDR practices to SALT/Suggestopedia elsewhere, but also considerable differences.

* * *

Introduction

In October of 1984 I had the opportunity to visit the Karl Marx Universität in Leipzig, German Democratic Republic. The administrative part of the Institute of Mnemology of that University is located on the third floor of an old and neglected building. Dozent Janicke, the director, awaited me in his bright, modern and comfortable office which, as I was told later, also serves as a conference room. The institute consists of several rooms containing women working there as secretaries and typists.

In the course of my discussions with Dozent Jänicke I found out that Suggestopedic language teaching and all experiments regarding mnemology are being conducted in another building at the edge of the city. Every week all teachers and researchers, on occasion the technicians as well, meet in Dozent Jänicke's office to present and discuss progress reports and decide on directives regarding teaching and research. My impression was of a highly effective scientific team committed, serious and independent. In addition to the director who is a neurologist and psychiatrist, the members of this team include a music therapist, a psycho-physiologist, an education expert, several language and anatomy teachers all with special knowledge and training in psychology, and several laboratory technicians.

I was shown the laboratories where EEG, ECG and all kinds of bio-feedback measurements are taken. I was told that the collective periodically decides in a meeting what research should be conducted at any given time. Students who take suggestopedic courses at the Karl Marx Universität are often put under laboratory conditions for very specific purposes, (e.g. for research in psycho-physiological connection between such variables as activation, intelligence, personality, and memory and academic achievement). The students serve as "probandi" for psycho-physiological research for several reasons, i.e., to validate accepted criteria, to measure the effectiveness of individual elements of suggestopedia, etc. The results achieved are then incorporated into the next course design. This interrelationship between scientific research and practical application has proven to be most successful for them. Some of their research results are now published, i.e., in the Wissenschaftliche Berichte. So far three volumes of research reports have been published.

In the GDR, suggestopedia is not used either in elementary or secondary schools. Suggestopedic foreign language courses are conducted in schools for continuing education and other educational centers. Like the students who take suggestopedic courses at the Institute for Mnemology, these continuing education students come from the working population aged between 18 and 55 years and have varying backgrounds. In East Germany, education and methodology are under strict government control. The foreign languages taught are Russian, English, and Spanish. Several years ago, under the guidance of the research institute, a controlled experiment was conducted with five control classes and one suggestopedic class in anatomy for future physiotherapists.

In comparing suggestopedia in the GDR with SALT in the USA or Australia I found a number of differences.

(1) Relaxation and imagery

In the GDR neither physical nor mental relaxation exercises precede the actual lesson; likewise, visualizations and imagery are not in use. Frequently, the GDR students do take off their shoes and put on slippers before they enter the classrooms in order to emphasize the "living room atmosphere."

(2) Environment

From the standpoint of suggestive impact, the classrooms at the Institute are not particularly attractive. The students sit in reclining chairs in a square around the tables. The Spanish room is bright and airy, but the English room is located in the cellar of the old building, with poor lighting and ventilation. Some wood panelling on the walls, however, gives it a special charm. The room for the seance, which is also used for the breaks, is beautiful and full of atmosphere and serenity. The room retains the appearance of a pre-war library, with dark-brown leather chairs, a large tiled stove, a heavy oak table, a once thick but now worn wool carpet, landscape paintings on the walls, and high old-fashioned windows. Almost hidden in a corner is the sound equipment -- reel-to-reel tapes -- and the teacher reading the text. I experienced a Spanish grammar seance in that room.

(3) Concert presentations

In East Germany only *one* concert seance is given. The teacher spoke with irregular, unpredictable three level intonation. To my surprise he increased the speed of his reading to the point near the end when I could no longer understand a word. The volume of the Largo adagio music of the classical period was below the teacher's normal voice level. The research team at the Institute found that a speed-up in the concert seance from normal speaking speed to very fast not only enables the teacher to get more material across but increases retention. I detected no synchronization of text and music, and no special attention was paid to breathing. The teacher began to increase the speed of his reading when the music changed from an adagio to an allegro.

(4) Post-course assessment

Following a suggestopedic foreign language course, the students are given a written and oral test. At no time do their students present a so-called psycho-drama. I explained to the researchers the type of psycho-drama that I had used in my teaching. They responded that their students were confronted with real life problems, not something imaginary and unreal as my simulated dramas.

In the Spanish class I witnessed one such problem-solving skit. This skit dealt with three young people, two men and a woman, who had just arrived in a Cuban city and wanted a room in a hotel. The receptionist told them that he had only two rooms, not three. Each one of the three argued his/her point regarding his/her entitlement to a room. This skit lasted at least twenty minutes.

Two groups of four students each played that skit simultaneously. One student -- there were nine in the class -- had the duty to monitor the discussions and present the solutions at the end of the skit.

(5) Student selections

Of the 300 applicants only ten were chosen for the Spanish course I observed. All applicants answered two questionnaires, consisting chiefly of psychological tests. The examiners then selected ten applicants who have *one* unnamed criterion in common. The selected ten obtained permission from their respective authorities at their place of work to study instead of going to work.

Classes begin at 9 a.m. and end at 12:45 p.m. with one half hour break. The concert seances are always placed at the end of the day and the students are encouraged to go home quietly. They are told not to engage in any kind of work. At bedtime they are supposed to read through the material of the day. They are advised to spend the afternoon involved in cultural activities.

(6) Course purposes

When asked why they studied the foreign language, they all said, "aus beruflichen Gründen", for job reasons. When asked what sort of work they did at their jobs, their answers were as manifold as their number.

(7) Class breaks

During the break in mid-morning the students chat in their target languages, over a cup of coffee for the "Cubans" and a cup of tea for the "English".

(8) Grammatical learning

I found considerable grammatical explanation on the blackboards but no grammar posters on the walls The students were given grammar sheets with paradigms and practice sentences In the Spanish class the teacher and students spent about twenty minutes reading and explaining grammar points in the form of paradigms prior to the grammar seance The teacher read the respective grammar rather dramatically without music while the students followed his reading and made occasional notes When all appeared to be understood the students moved into the seance room for the concert

(9) Student response

All students apparently found suggestopedic teaching most enjoyable and effective At first I was amazed to realize that none of them knew anything about the method and the theories behind it However it became clear that students were kept in ignorance in order to eliminate the expectancy of better learning which in itself might influence motivation and could thereby invalidate some of the psycho-physiological research experimentation When I told the students about my work with suggestopedia in Australia I noticed their surprise at hearing that we too teach this way

(10) Materials

This Institute had had its last contact with Dr Georgi Lozanov in 1982 Since that time they have developed their own suggestopedic system and adapted it to their own needs thinking and research results The East German researchers have been in close contact with their Hungarian counterparts The East Germans produce their own language text books and update them frequently according to their needs and research My impression was that the students there are expected to develop practical creativity survival skills rather than expansion of their personalities an aspect we stress so much in Western suggestopedia

(11) Russian Language Courses in Leipzig

In 1973 the first Leipzig suggestopedic courses were conducted in Russian at the educational center of the collective Robotron Since 1977 English courses are being offered as well By 1978 more than 500 adults aged between 18 and 55 had taken their suggestopedic courses with up to 12 people admitted to a course Each course lasts for six weeks For both languages taught the teachers developed introductory courses to prepare the students for level one In those introductory courses the students learn approximately 1000 lexical items In this way the teachers make sure that the students of level one have a similar foundation of knowledge of the target language The preparation course and level one of the language course deal exclusively with everyday topics i e notional/functional topics and with the geographical and cultural situation of the Soviet Union and England respectively as well as with normative grammar Grammar is not stressed although some grammatical structures are being taught as they appear in the texts Grammar is not taught for the sake of grammar at this level

Level two deals with more general themes of science and technology, basic concepts of economic politics and general topics from the area of mathematical and electro-technology. Only very difficult aspects of grammar are taught.

In level three special topics in the area of technology, energy, and commerce become the subject matter. Grammar is reviewed but no longer taught.

Much attention is paid to phonetics at all levels, as a perfect command of cultured pronunciation and intonation is their objective. The students and teachers work with two sets of texts. One set is the textbook, and the other is used for the seances; redundant vocabulary has been skillfully eliminated. The text for the seances shows the target language and the translation, a list of the new vocabulary and a list of the new verbs. The teachers at the collective Robotron call this the nucleus of the material. In addition to this nuclear text, other material has been produced which they call 'variable material', consisting for instance of interviews and grammar exercises translated into both the target language and the mother tongue. Level one contains predominately dialogues and descriptive texts, levels two and three monologue texts and lessons without text. The lexical items presented serve the purpose of guided conversations and often highlight special grammatical points. Only those verbs which are used frequently and those which can be used for grammar demonstration are included.

In 1972 the Institute conducted a controlled experiment in 1972 at the School of Medicine teaching anatomy in six courses. Each of five courses had an equal number of experimental and control students. Course six had 48 suggestopedic students enrolled, and was taught throughout the whole year, which was not the case with the other courses. The results showed a decrease in teaching time in all five experimental courses, less time spent on homework, generally higher marks, and no failing marks. They also found that the weaker students and those who showed neurotic personality traits fared better with suggestopedic teaching than their counterparts in the conventionally taught classes.

The following are conclusions from their experiments:

a) Suggestopedic teaching can achieve and even increase the same learning results in a shorter time than traditional teaching methods.
b) Inconsistent results may appear through unavoidable external interference. Such disturbing factors must therefore be eliminated.
c) There is no subject area within anatomy which in principal is not suitable for suggestopedic teaching.
d) Suggestopedic teaching can generally be integrated into a total course of studies. It can increase the student's positive attitude to learning, his/her ability and independence.

e) All elements of suggestopedic teaching must be observed in order to achieve maximum results.

To my knowledge the researchers in the GDR have not researched or taught any other subjects besides foreign language and anatomy. Specific research is continuing in an effective and thorough manner under the auspices of the Karl Marx Universitat and various Government Ministries. Such cooperation between academia and government, whereby the latter is willing to bear the financial burden, must bring interesting results. In the GDR, suggestopedia is organized and in firm and competent hands. This definitely contrasts with the activity in the West, where so many people use widely varying techniques, as well as make unsubstantiated claims which may do more harm than good to a potentially wonderful method.

In my view every country should establish a research set-up similar to the one in the Institute of Mnemology at the Karl Marx Universitat. We could then validate claims and compare results on a much larger scale. We could refine the suggestopedic method by examining its adaptations in each country, learning from and about each other in order to develop it further. Suggestopedia might then become universal, no longer dominated by any country East or West of the Iron Curtain. In this way we might disperse the suspicions which have surrounded suggestopedia and its originator ever since it became known in the West. Suggestopedic teachers would no longer have to endure being belittled, pitied and taken for slightly off the mark. Suggestopedic teachers might then feel more pride and fulfillment in the knowledge that they do their share in making this world a better place by producing happier, healthier, more knowledgeable, more creative, more positive, and more humane students, who in the long run will bring about a changed humanity.

* * * * * *

References

Wissenschaftliche Berichte, *1&2*, Karl Marx Universität, Leipzig, Forschungsstelle für Mnemologie, Leipzig, 1982.

Wissenschaftliche Berichte, *3*, Karl Marx Universität, Leipzig, Forschungsstelle für Mnemologie, Leipzig, 1983.

* * * * * * * * *

Les Recherches Suggestopedique en Allemagen: Un Rapport Personnel

L'auteur explique en details sa visite des cours Suggestopedique en allemagne de l'est. Ses observations reflete des ressemblances entre l'usage de la pratique en allemagne comparant avec d'autre pays, mais aussi de differences considerable.

Suggestopädie-Forschung in der DDR: Ein persönlicher Bericht

Die Autorin berichtet von ihrem Besuch von suggestopädischen Klassen in Ostdeutschland. Ihre Beobachtungen reflektieren Ahnlichkeiten von DDR Praktiken mit SALT/Suggestopädie, an anderen Orten, zeigen jedoch auch bedeutende Unterschiede auf.

Investigacion de Sugestopedia en GDR: Un Informe Personal

El autor describe su visita a clases sugestopedicas en Alemania Oriental. Sus observaciones reflejan semejanzas de practicas de GDR con SALT/Sugestopedia en otros lugares, pero tambien diferencias considerables.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(2)

Suggestibiltiy As It Relates to Responses to Three Levels of Suggestion in Four-Year Old Children

Kim M. Wilson
University of Wisconsin-Superior

Abstract. Suggestibility of fifteen four-year old children was measured by their responses to three verbal treatments suggesting falling. The treatments consisted of an indirect, a direct, and a no suggestion level of treatment. Differences between both the indirect and direct levels of suggestion when compared to the control condition were significant at $p < .01$ and $p < .005$ respectively. No difference between the indirect and direct levels was found. No difference between responses as it related to sex was found, but a significant treatment order effect was found. This experiment provides a foundation on which to base further research into the relationship between suggestibility and learning, direct and indirect suggestion, and other methods of measuring suggestibility.

* * *

Introduction

Suggestology is the study of the psychology of suggestion. The application of suggestology to learning and education which emphasizes the creation of a positive and motivationally enhanced atmosphere by removing stress from the learning environment is called suggestopedia. The founder of the suggestopedic method is Dr. Georgi Lozanov, former director of the Institute of Suggestology in Sofia, Bulgaria.

In his method, Lozanov (1978) identifies several psychological barriers that can either hinder or enhance the receptivity of an individual to suggestion. Suggestive barriers have a necessary function in that they serve as a system of checks and balances to aid an individual in maintaining harmony with an environment which constantly bombards them with suggestive stimuli. Within the context of suggestopedia, these suggestive barriers often make it difficult for an individual to accept an instructor's suggestion that learning is easy and pleasant. The purpose of the suggestopedic method is to break down the antisuggestive barriers that inhibit learning.

In the suggestopedic methodology, many aspects of the concept of positive suggestion are emphasized. As a result, the closely related concept of suggestibility has generated much interest as an area of needed research. Suggestibility is simply the degree to which an individual is influenced by suggestion. Under what condition is the suggestibility of an individual enhanced or reduced? How does the level of suggestibility of an individual affect the ability to learn? Do age, sex, preconceived ideas and attitudes, subject matter, or levels of suggestion influence receptivity to suggestion or therefore learning?

The purpose of this study is related to the reception of suggestion as a measure of suggestibility. The study is limited to the effects of levels of suggestion on four-year old children as it relates to their falling-backward responses to the suggestions.

Method

Subjects

The subjects chosen for this experiment were four-year old children enrolled in a university affiliated daycare center. Admission to the center required that parents grant signed permission for their children to participate in research studies conducted by university students. The ages of the children were verified through the birth dates listed on their enrollment forms. Twenty-five children, fourteen boys and eleven girls were available for the study. Of these, twelve boys were chosen randomly by drawing their names out of a hat. Because only eleven girls were available for the study, all of them were included in the research sample. Subjects could only be tested when they were available at the center. For this reason and restrictions due to conflicts with scheduled daily activities, all subjects could not be tested. Nine boys and nine girls were presented with the opportunity to be tested, but three of the boys refused to participate. Consequently, six boys and nine girls were given the experimental treatments.

Apparatus

The device used to measure the dependent variable was a thirty-six inch long retractable tape measure. The tape measure was clamped to a table in front of the subject and the tape itself was attached to an adjustable belt around the waist. (See Appendix for illustration.)

Procedure

The experiment was designed as a within-group study with each subject receiving three verbal imagery treatments. The treatments consisted of a no-suggestion treatment, which served as the control condition, an indirect suggestion treatment, and a direct suggestion treatment. The independent variable was the level of suggestion given. The dependent variable measured was the distance the subject fell backward as a response to the suggestion given.

There were six possible treatment orders and they were assigned to subjects in a prescribed order to insure that each order was repeated four times. (One order was assigned only three times for lack of a subject to assign it to.) Counterbalancing of treatments was considered more important than the inability to randomly select female subjects. Following are the three treatments as read to each subject. It was felt that the personal contact of the experimenter with minimal variations in treatment presentation was more appropriate than presenting the treatments on a pre-recorded tape. The treatments were printed on index cards.

> *No-Suggestion Treatment*: Close your eyes. With your eyes closed, think about yourself standing in front of a big pile of pillows. Can you see the big pile of pillows behind you? Can you imagine that? Now, I am going to take away my hand.

> *Indirect Suggestion Treatment*: Close your eyes. With your eyes closed, think about yourself standing in front of a big pile of pillows. Can you see the big pile of pillows behind you? Imagine the big pile of pillows behind you. Can you imagine that? Think about the soft pillows, soft, soft, soft, pillows. Now, I am going to take away my hand.

> *Direct Suggestion Treatment*: Close your eyes. With your eyes closed, think about yourself standing in front of a big pile of pillows. Can you see the big pile of pillows behind you? Imagine that you are falling backwards, falling, falling, falling backwards. Now, I am going to take away my hand.

Each subject was told by the daycare supervisor that they were going to play a game with me. I greeted and brought the child into the area where the measuring apparatus was set up and my assistant was waiting. Other subjects were not allowed into this area at any time except at the time they participated in the study.

Due to the age of the subjects, a standard introduction was deemed inappropriate. It was felt that it was more important to make each child relaxed and comfortable with the experiment that to worry about slight differences in the initial presentation. Treatment cards were arranged in the pre-assigned order for that subject.

When I felt that the subject was relaxed and comfortable with me, I asked the child to stand on the cardboard form taped to the floor with heels touching the back of the form. I helped the subject into this position. I then told the child that I was going to put a belt around their waist and adjust it until it felt comfortable. I told the subject that I was going to attach the end of the tape to the belt and did so as I explained.

My assistant was positioned near the tape measure in order to read and record the results of each treatment. This individual spoke only prior to my introduction and following the completion of the treatments. The results were recorded on a list consisting of subject names and their assigned treatment orders. To aid in taking accurate measurements, one-fourth inch intervals were color-coded on the tape itself for quick and easy recognition.

At this point, I knelt down on the left side of the subject and placed my right hand on the child's back. I asked the subject to close his/her eyes and listen to what I was going to say. I read the prearranged treatments in a standard way. It would be noted here that my assistant counteracted any normal movement of the subject during the treatments by adjusting the sliding guide on the tape. At the moment that I was through reading "Now, I am going take away my hand" and removed it, my assistant took the measurement of the backward movement of the subject. It was recorded and the sliding guide was readjusted. Approximately ten seconds passed between treatments.

When all three treatments were completed, the subject was thanked and given a cookie for his/her cooperation. The child was then taken out of the testing area and the next child was located and tested.

Results

Expectation based upon the first null hypothesis proposed that there would be no significant difference in subject response between indirect and the no-suggestion imagery treatment conditions. Using the *t*-test for difference between means of correlated groups, this hypothesis was rejected at or beyond the .01 level of significance with a *t*-value of 2.92.

Expectation based upon the second null hypothesis proposed that there would be no significant difference in subject response between the direct and the no-suggestion imagery treatment conditions. This hypothesis was also rejected at or beyond the .005 level of significance with a *t*-value of 3.10.

Expectation based upon the third null hypothesis proposed that there would be no significant difference in subject responses between the direct and indirect suggestion treatment conditions. This hypothesis was accepted with a *t*-value of 1.13; this *t*-value indicates that there was no significant difference in subject responses between the two treatments as presented in this experiment. See Table I.

Table I. Means, Standard Deviations and *t*-values for the suggestion treatment groups. df=14

Suggestion Treatment	*Mean*	*SD*	*t-value, D and*	*t-value, I and*
Direct	2.50	2.03	----	----
Indirect	1.76	1.25	1.13	----
None	0.83	0.84	3.10**	2.92*

Note. Mean is calculated in one-fourth inch units. *p < .01.
**p < .005

Further analysis of the data by use of the Mann-Whitney U-Test indicated that there was no significant difference between responses to the treatments as it related to the gender of the subject. See Table II.

Table II. Mann-Whitney U-values for the treatment groups

Treatment	*U-value*
Direct Suggestion	25.5
Indirect Suggestion	34.0
No Suggestion	24.5

Treatment order effects were analyzed using the Kruskal-Wallis H-Test. Results showed that there was no significant difference in the dependent variable as it related to the presentation of the indirect or the direct suggestion treatments first in the order. However, a significant difference was noted as it related to the presentation of the control condition first in the order with a H-value of 8.30 significant at $p < .01$. This result is interesting for it appears to be related to the acceptance of the null hypothesis which stated that there was no significant difference between subject responses to indirect and direct suggestion treatments. See Table III.

Table III. Kruskal-Wallis H-values for the treatment groups, df=2

Treatment	*H-value*
Direct Suggestion	1.45
Indirect Suggestion	2.25
No Suggestion	8.30*

*$p < .01$

Discussion

Despite the limitations of the study, it does serve as a foundation on which to base further research. This experiment indicates that four-year old children are susceptible to suggestion.

Future study to determine the relationship between levels of suggestibility and learning should be pursued. By measuring the suggestibility of students at regular intervals in their early education, the ages coinciding with different levels of susceptibility to suggestion could be targeted. Various target groups based on sex, socio-economic status of parents, as well as the extent of parental education could be identified.

This study has shown that there are distinct and measurable differences in responses to levels of suggestion. Most interesting is the similarity between responses to indirect and direct suggestion. Further research should be conducted to determine if there are significant differences between indirect and direct suggestion. Indirect suggestion may be more effective in its use with students who may react adversely to the use of direct suggestion.

Research is also needed as it relates to the suggestibility levels and learning expectations of the so-called disabled learners as opposed to easy learners. The use of positive and negative suggestion should be studied as well in relation to high or low learning expectations of students. Finally, research into various methods of measuring suggestibility is warranted.

* * * * * *

References

Arons, H. (1948). *Master Course in Hypnotism*. So Orange, N.J.: Power Publications, Inc.

Bancroft, J.W. (1981). Adapting suggestopedia/sophrology to the traditional foreign language classroom. *J. of the Society for Accelerative Learning and Teaching, 6*(2), 137-144.

Brownlee, P.P. (1981). Suggestopedia and its application to education of children with learning disabilities. *J. of the Society for Accelerative Learning and Teaching, 6*(1), 3-45.

Held, D.F. (1979). *Intuitive Approach to Reading and Learning Disabilities*. Springfield, Il: Charles Thomas Publishers.

Held, D.F. (1979). Case Study- Now Johnny Can Read. *J. of the Society for Accelerative Learning and Teaching, 4*(3), 170-176.

Kaplan, L. (1981). A foreign language course based on superlearning. *J. of the Society for Accelerative Learning and Teaching, 6*(1), 51-58.

Lozanov, G. (1978). *Suggestology and Outlines of Suggestopedy*. London: Gordon and Breach.

Nelson, W. (1979). Experimentation with the Lozanov method in teaching word retention to children with learning disabilities. *J. of the Society for Accelerative Learning and Teaching, 4*(4), 228-271.

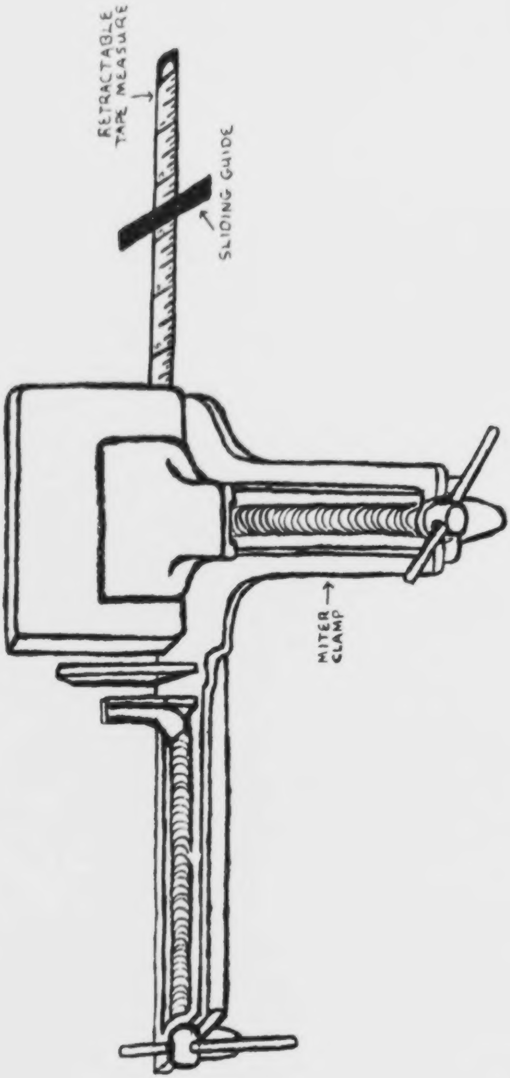
Paschall, M. & Whitacre, W. (1982). Using suggestopedia in the ESL classroom. *J. of the Society for Accelerative Learning and Teaching, 7*(1), 32-40.

Pullen, C.W. (1979). Suggestopedia in an American high school setting. *J. of the Society for Accelerative Learning and Teaching, 4*(4), 199-206.

* * * * * * * * *

Appendix

This apparatus was secured to a table with another clamp and the end of the tape to the subject with a belt placed around the waist.


RETRACTABLE TAPE MEASURE
SLIDING GUIDE
MITER CLAMP

La Suggestibilite en relation aux reponses de trois niveau de suggestions avec des enfants de quatre ans

La suggestibilite de quinze enfants de quatre ans a ete mesure par leur reaction envers trois traitement suggerant tomber Le traitement consistait de trois niveau de traitement direct indirect et pas de suggestion Les differences entre les deux niveau de suggestion direct et indirect aux conditions contrôle etait considerable a $p < 01$ et $p < 005$ respectivement Aucune difference a ete constate entre les niveau direct et indirect Aucune difference a ete constater en relation du sexe Mais l effet de l ordre de traitement considerable a ete trouve Cette experience fournie une fondation pour baser d autres recherches en relation avec l apprentissage et la suggestibilite direct et indirect de la suggestion et d autre methods de mesure la suggestibilite

Die Beeinflussbarkeit von Vierjahrigen in Verbindung mit deren Ansprechen auf drei Ebenen von Suggestion

Die Beeinflussbarkeit von 15 vierjahrigen Kindern wurde gemessen anhand ihres Ansprechens auf drei verschiedene verbale Suggestionen, dass sie fallen Der Versuch bestand aus einer indirekten, direkten, und keine Suggestion enthaltenden Ebene der 'Äusserung Die Unterschiede zwischen den indirekten und direkten Ebenen der Suggestion, verglichen mit der Kontrollbedingung, waren bedeutend und betrugen jeweils $p < 01$ und $p < 005$ Kein Unterschied wurde zwischen den indirekten und direkten Ebenen gefunden Ferner bestand kein Unterschied zwischen den Geschlechtern in ihrem Ansprechen Es bestand jedoch ein bedeutender Versuchsanordnungseffekt Dieses Experiment liefert eine Grundlage, auf der weitere Untersuchungen über die Beziehung von Beeinflussbarkeit und Lernen, direkter und indirekter Suggestion, und anderer Methoden zur Messung von Beeinflussbarkeit basiert werden können

Sugestibilidad y su Relacion a Reacciones a Tres Niveles de Sugestion en Niños de Cuatro Años

La sugestibilidad de cincuenta niños de cuatro años fue medida por sus reacciones a tres tratamientos verbales sugiriendo caida Los tratamientos consistieron en un nivel de tratamiento indirecto un nivel directo, y un nivel sin sugestion Diferencias entre los niveles de sugestion indirecto y directo cuando comparados con el grupo control eran significativas a $p < 01$ y $p < 005$ respectivamente No se encontraron diferencias entre los niveles indirecto y directo No se encontraron diferencias de reacciones entre los sexos pero se encontro un efecto de orden de tratamiento significativo Este experimento proporciona un fundamento en el cual se puede basar adicional investigacion de la relacion entre sugestibilidad y aprendizaje, sugestion directa e indirecta, y otros metodos de medir sugestibilidad

J. of the Society for Accelerative Learning and Teaching, 1986, 11(2)

Book review

Master Teaching

by Dr Bernard F Cleveland
Connecting Link Press, S74 W20850 Field Drive
Muckego, WI 53150

Reviewed by John Senatore

Master teachers aim to make the present and the future work. "Let us not go over the old ground," the quote from Cicero used in the preface for this book says, "Let us rather prepare for what is to come." And that includes addressing, with urgency, the critical gap between knowledge and learning.

This book offers five major outcomes: (1) Learn how to observe and interpret students' non-verbal feedback so that instructional goals can be achieved; (2) Learn powerful rapport-building techniques; (3) Learn techniques that will assist students in developing alternative responses in situations where such options are needed; (4) Learn to elicit and install learning patterns; (5) Make the teaching-learning process more productive and enjoyable for both teachers and students. In two sections (Section 1: The Structure of Learning; Section 2: The Structure of Effective Teaching), Cleveland invites teachers, trainers, teachers of teachers to re-train themselves, train others, re-train others so that the gap between knowledge and learning disappears. Although this book can be read and studied, the outcomes can only be achieved by doing the training exercises. Present teaching-learning would be revolutionized if only 50% more teachers used rapport-building skills. Instead of exhorting us to "build rapport," Cleveland offers exercises, specific scientific means for installing these *sine qua non* skills.

"Good communication is the essence of superior teaching," Cleveland reminds us, and then up-ends us with "Regardless of your intention, the meaning of the communication is the response you receive. There are no mistakes in communication, there are only responses and outcomes. If you are unable to get the responses from students that you seek, then change your communication pattern." This book reveals how you can, for, after all, "The purpose of good communication is to act effectively." Cleveland's organizing principle: "Behavioral reorganization, which is achieved through sensory-based learning, also results in cognitive reorganization." So, learning is behavioral change--not isolated recall, recitation, test-passing and other things. Cleveland's book with its series of sensory-based exercises invites us to bridge that gap between knowledge and learning, may even offend and challenge much of what passes as teaching-learning today.

Cleveland's Principles of learning include: (1) In order for superior communication to occur, the development of physiological states that allow maximum communication to occur is necessary. (2) In any teaching situation, the person with the most flexibility ends up controlling the situation. Corollary: Student resistance to communication is feedback of the teacher's limits and inflexibility. (3) A student's highest quality response is always behavioral. So, learning to develop sensory acuity leads to increased learning. (4) Regardless of how it is perceived by you or anyone else, each student's behavior represents the best choice that student has in that situation or at that point in time. And Cleveland exercises those who choose to play master teachers with proven ways to increase choice.

John Goodlad in his book *A Place Called School: Prospects for the Future* recommends that incentives be implemented for teachers. Cleveland's title rams into reports that master teachers are leaving schools. Goodlad also found that teacher education programs are disturbingly alike and almost uniformly inadequate. Cleveland offers a way to remedy that. Expectations and priorities, national and local, have driven teaching-learning off-course, even buried that purpose; Cleveland implicitly invites us to restore the primacy of teaching-learning in the face of what is going on with priorities and politics and funding. Goodlad notes the paucity of teaching-models students witness and experience, and that future teachers enter the classroom knowing. Cleveland's model, verifiable experientially, more than invites study; it cries for installation in persons because it works.

His model begins with attempts to penetrate our assumptions -- behaviorally, not just intellectually. Ho hum, we've heard it before: "Each person has his own model of the world." And the subjects we teach. And that model runs us. But how do we access that person's model of the subject, the world? Cleveland's exercises show us. Internal states and physiology influence each other, so we often need to change physical and psychological states for learning (change) to occur. Cleveland rehearses us in ways to change student states. How do we get inside a person's head so we can know how that person is processing information, what they are making it mean? Cleveland exercises our watching-skills so we read accurately what is being revealed about subjective experiences. He presents and supports Walter Barbe and Michael Mallone's findings on learning modalities. Significant here is matching teacher and learner in modalities: a teacher with a dominant modality contributes to failing students of different preferred modalities, but a teacher with sensory acuity, flexible enough to detect, switch and match modalities has superior communication; that teacher operates from the presumption that there are no student failures, only "teaching" failures. And even those "failures" are only feedback, outcomes to be used.

No one will use this book unless s/he is willing to put on a new mind as easily as dressing and undressing. Cleveland's model (measured by its usefulness, not its truth) structures effective teaching far differently from the talking-school model. Cleveland's model begins with building rapport, moves to recognizing dominant learning modalities and matching them, gathering information with Bandler-Grinder's exquisite set of linguistic tools, the Meta-Model; assists students in identifying and stating well-formed outcomes; helps students draw on their own resources to change their behavior; and reminds all for constant use of the "relevancy challenge": Are we on purpose now?

In Cleveland's model, we come to decision-points. Do I use developmental techniques or remedial techniques? The remedial techniques are linking (a kind of conditioning), integrating links (a way of editing unpleasant experiences and replacing them with preferred states), combining links and dissociate to achieve an outcome, and ways to revise life-patterns. Cleveland's developmental techniques involve transforming context and meaning so that responses change and behaviors change, training on how to elicit a learning pattern and install new patterns, and concludes with exercises on using the power of metaphor construction.

For me, Chapter 5, The Brain, is the weakest section, intentionally, I infer, since Cleveland's point is to invite us to become sensorily acute to the overuse, even exclusive use, of right-brain or left-brain. Cleveland combines Bernice McCarthy's 4Mat System and elicitation and installation of learning patterns.

Cleveland offers new beginnings at a time when the USA faces its most serious domestic problem: the decline of the effectiveness of its educational system. The impressive list of scapegoats (broken homes, racial tension, inadequate schools, incompetent teachers, drugs, abandonment of educational standards, excessive devotion to TV, abandonment of ethical codes, lack of faith in the nation and its future, persistent adherence to the American Myth that there is a free lunch) in no way addresses the critical gap between knowledge and learning. Squabbling over the decline and fall of American education, playing Aint-It-Awful, no way addresses the adventure of fostering a rebirth of scientifically-grounded education, or the rebirth of quality education. This book does address skills needed by persons choosing to join the educational adventure.

For those who accept passage on the journey, I recommend training with Cleveland's book. Like *Meta-Cation: Prescriptions for Some Ailing Educational Processes* by Sid Jacobson, Cleveland shows a way the powerful, tried processes of Neurolinguistic Programming can be used in education. Used in conjunction with Bruce Joyce and Marsha Weil's *Models of Teaching*, anyone committed to teaching-learning can examine approaches to creating environments for learning to replace what we may have, explore ways of thinking to decide which outcomes can best be achieved with which models. Choice is better than no choice; with these books, despite what seems to be killing education, we can transform the world of schools.

The things in these books work--when we do. For anyone who wants to move on to what works, I urge you to play with a new mind, put on a new mind, even adopt the mind of Master Teaching.

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Volume 11, Number 3 Fall, 1986

Published by the Society for Accelerative Learning and Teaching, Inc.

ISSN 0273-2459

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Guidelines for Contributors

The Editor welcomes submission of manuscripts on an interdisciplinary nature relevant to all aspects of suggestive learning-teaching-therapy counseling within the theoretical and procedural confines of Suggestology and/or Suggestopedia. The JOURNAL FOR THE SOCIETY OF ACCELERATIVE LEARNING AND TEACHING will publish a wide variety of articles - including critical reviews, theoretical analyses, speculative papers, case studies, quasi-experimental studies, as well as reports of empirical research (basic or applied) of major significance. The basic focus is Suggestopedia theory , research and application.

MANUSCRIPTS should be typed on one side of standard (8 ½ x 11 non-corrasable) bond typewriter paper, clearly mimeographed or multilithed. *Do not use ditto.* The original and three copies (carbon or dry electrostatic copies) should be submitted. Authors should also keep a personal copy to check against proofs. *All material must be double-spaced,* with ample margins (1 ½ in. on each side and 1 ½ on top and bottom). Any paper should not be longer than 20 typewritten pages, excluding bibliography, footnotes, tables, figures, etc. In special cases, longer papers may be submitted for publication.

REFERENCES should follow APA style. Authors should follow the standardized bibliographic format for reference citation as shown in the American Psychological Association Manual (1974). In the body of the text, the published work of others should be referred to by name and publication date in parentheses as follows, "Prichard and Taylor (1976) reported..." In the bibliography at the end, the referred-to articles should be listed fully in alphabetical order by author(s), title and publication source information as follows, "Prichard, A. & Taylor, J. Adapting the Lozanov method for remedial instruction. *Journal of Suggestive-Accelerative Learning and Teaching,* 1976 (Sum), 1(2), 107-118." Footnotes should be used to refer to unpublished material not generally available to readers, for example in the text, "Schuster claimed that relaxation..." A list of all footnotes should be typed on a separate sheet and placed between the end of the text and before the bibliography. An example of an entry in this list of footnotes is, "Schuster, D.H. The effects of relaxation and suggestions on the learning of Spanish words. Unpublished report, Psychology Department, Iowa State University, 1972, 6pp."

TABLES AND FIGURES should be kept to an absolute minimum and should supplement rather than duplicate text material. Each table should be typed on a separate sheet and be placed after the reference section of the manuscript. Figures should be submitted in a form suitable for photographic reproduction. Use India ink on a good grade of drawing paper. Photographs (black and white only) submitted as figures should be 5 x 7 inch glossy prints, uncropped and marked lightly on the back with a pencil. Submit all figures, photographs and tables with each of the four sets of manuscript materials.

ABSTRACTS between 50 and 200 words of each manuscript should be typed on a separate sheet and placed at the beginning of the manuscript.

PROOFS in typescript form of each article, letter to the Editor, brief communication, or book review will be returned to the author upon final acceptance of a manuscript. These are to be reviewed carefully and returned to the Journal's publication address within 5 working days. Typescripts not returned within this time limit will be considered approved. Authors are cautioned to read all tabular material and quotes against their copy of the original manuscript. Authors will receive 5 copies of their work on publication.

All manuscripts should be delivered by first class mail to:

Editor

The Journal of the Society for Accelertive Learning and Teaching
Psychology Department, Iowa State University, Ames, Iowa 50010

JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Volume 11, Number 3 .... Fall 1986

CONTENTS

Accelerating Concept Formation
Owen Caskey 137

The Brain and Accelerative Learning, Part II:
The Brain and Its Functions
James D. Hand and Barbara L. Stein 149

A SALT Pilot Study:
College Developmental Mathematics
Allyn Prichard 167

Superlearning and Retention
Gary F. Render and Lynn D. Anderson 177

Use of the SALT Method to teach a short course on paper characteristics
D. H. Schuster 185

The Three-Fingers Technique:
A Means of Accelerating Learning?
Harry E. Stanton 193

Using Imagery to Teach Study Skills
David M. Wark 203

Don Schuster, PhD
Editor

Kay Herr, PhD
Associate Editor

Marj Whitney
Circulation

Renate Nummela-Caine, PhD
Associate Editor

EDITORIAL BOARD

W Jane Bancroft, PhD
Scarborough College
Univ of Toronto
West Hill, Ont M1C 1A4

Owen Caskey, PhD
8201 Edgemere
El Paso TX 79925

R McCrae Cochrane, PhD
Center for Cont Development
64 Mountain St
Sharon MA 02067

Priscilla Donovan, PhD
3050 S Zenia St
Denver CO 80231

Kurt A Fuerst, Ph D
Carleton University
Colonel By Dr
Ottawa, Ont K1S 5B6

Lyelle Palmer, PhD
Winona State University
Winona MN 55987

Pedro R Portes, PhD
School of Education
University of Louisville
Louisville KY

Gabriel Racle, PhD
1554 Rolland Av
Ottawa, Ont K1G 0J4

John Senatore, EdD
Univ of Southern Colorado
Pueblo CO 81001

JoLene Somsky
3700 Orleans Av
Sioux City IA 51105

Win Wenger, PhD
P O Box 332
Gaithersburg MD 20877

Wendy Whitacre Stern
5381 W Calle Conejo
Tucson AZ 85745

For subscription, send order to: SALT Journal, Psychology Dept., Iowa State University, Ames IA 50011. Subscription rates: $20.00 per year, individual subscription. Outside U.S. add $15.00 per year for air mail (Canada and Mexico, same as U.S.). Back issues $7.00 per copy, $12.00 per doubled copy. List of available back issues sent on request. Copyright 1986 by the Society for Accelerative Learning and Teaching, Psychology Dept., Iowa State University, Ames IA 50011.

Mailing Permit 190, Ames, Iowa 50010

Printed in the USA

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3).

Accelerating Concept Formation*

Owen Caskey
Emeritus Professor
Texas Tech University

Abstract. A panel on "Accelerating Conceptual Abilities for College Students," presented at the 1986 SALT Conference, focused on programs and methods used to enhance concept learning with special emphasis on higher education. This paper summarizes the initial presentation which, along with illustrations and examples not included in this report, served to introduce and define concept development, outline concept development stages, summarize research conclusions in concept acquisition, and relate SALT principles to concept learning.

* * *

Introduction

A concept may be defined as an abstraction that represents objects or events having similar properties. "The Color Purple" is a specific example of the concept of movie which, in itself, includes all those things with similar properties. Color is a concept representing physical properties as perceived by humans, while purple is a concept representing similar properties of

---

This paper represents, in part, contributions to the panel, "Accelerating Conceptual Abilities for College Students," at the 1986 SALT Conference.

physical wavelengths. To understand the use of the phrase, either as a general expression or in reference to a specific incident, requires a high level of concept development, as well as advanced language skills.

To conceptualize is to form, be aware of, and employ concepts in relation to human functioning in and understanding of the environment. To say that to conceptualize is to think, while not exactly accurate, is an expression of an individual's understanding of the world. More precisely, to conceptualize is to categorize and, in fact, the two terms are synonymous. A category is also a representation of objects or events that have similar properties. It is a rule for classifying things as being equal, or at least in some ways equal, since they have attributes, properties, or characteristics in common.

The Formation of Concepts

It is important that we be aware of the difference between the *formation* of a concept and the *attainment* of a concept. Formation is to arrive at the notion that some objects or ideas belong together. Attainment is to discover attributes that distinguish between members and non-members of the same class. You may have formed a concept of edible and non-edible mushrooms, but that is not the same as attaining the ability to distinguish between them, identify them, select them and pick them for eating. In addition, there are three types of concepts:

1. A *CONJUNCTIVE CONCEPT* has two or more attributes present. Pen is a conjunctive concept. A pen is held in the hand and can be used to write with; both conditions must be met if the object is to be a pen. Wine is a liquid, made from plant juice, and contains alcohol. All conditions must be met if it is to be wine.

2. A *DISJUNCTIVE CONCEPT* may join the presence of two or more attributes (i.e. a conjunctive concept) *OR* possess any one of the relevant attributes. A psychotic person has a delusional system, experiences hallucinations, or is out of touch with reality. The idea of contempt of court mean disrespect of the judge, refusing to answer questions under oath, or refusing to obey the order of the court. In both examples all or any one of the attributes may be sufficient for the classification.
3. A *RELATIONAL CONCEPT* not only has attribute values but has a specified relationship between them. A rectangle has four sides, but two of them must be equal in length and longer than the other two which must also be equal in length.

Note that to respond to differences among stimuli is what we refer to as discrimination learning, while responding to similarities is called concept learning. Therefore, the ability to use relevant verbal chains for representing the stimuli (i.e. language) is critical in forming concepts. So much is this the case that without sufficient language development (developmental age, mental ability, absence of handicapping conditions, language facility, language processing), the formation of concepts is all the more difficult or, in some cases, impossible. It follows that concept learning is a higher order human learning activity than discrimination learning.

Problems in Accelerating Concepts

In our attempt to find ways to accelerate or enhance concept leaning, however, we encounter at least three major problems. The most fundamental difficulty, although it is of less concern to those involved in adult learning settings, is the essential nature of how humans develop cognitive skills. Consider, for example, these documented research-based conclusions which, *incidentally, are consistent with all major developmental* theories:

1. The average child neither places objects (or ideas) into classes nor understands cause and effect relationships before age 2, since this typically occurs between ages 2 and 4.
2. The child does not usually understand multiple properties of classes before age 4.
3. Personal perception and intuition govern concepts, rather than logic and reason, between ages 4 and 7.
4. Between 7 and 11, the child gradually begins to deal with classes, ranking, and serial learning.
5. Hypothetical, abstract, and propositional thinking typically occur after the age of 11 or 12.

Obviously, one must be aware of the developmental level (not precisely the same as mental age or chronological age in many cases) of individuals who are being taught new concepts. For example, research shows that little can be done to help a child learn concepts at a higher level than the developmentally operative one despite intensive instruction, extensive practice, and significant rewards.

A second problem in teaching concepts results from the need which is the basis for learning concepts, to simplify the environment and react to it. In order to accomplish the establishment of categories (which is what concept learning is all about), humans adopt strategies of learning and develop preferences for information processing or learning styles. These strategies take on the form of patterns in the sequence of decisions which must be made in order to determine whether or not objects or abstractions belong to a given class.

Strategies for concept attainment can be grouped into four types of decision sequences:

1. *SIMULTANEOUS SCANNING* involves generating as many tenable hypotheses as possible and then eliminating all untenable hypotheses. While this is theoretically possible, and may be used in some instances, the human mind is not usually capable of considering such a large number of hypotheses simultaneously. To evaluate only three variables, for example, involves 15 hypotheses, which is beyond the number bit theory feels to be within the capability of simultaneous consideration.
2. *SUCCESSIVE SCANNING* involves establishing a hypothesis and then testing it. If the original conclusion (guess) is not confirmed, a second hypothesis is made. This is an economical, typical, and often effective trial-and-error approach. By the same token, it may be a lengthy, ineffective, and even unsuccessful strategy.
3. *CONSERVATIVE FOCUSING* is finding a positive and successful (correct) example and judging, selecting, or eliminating values, characteristics, or instances from successive positive examples, as the elements are altered, changed, modified, or eliminated. The end result is a reasonably clear-cut, accurate, and usable categorization of the concept.
4. *GAMBLING FOCUS* is when the individual varies more than one value at a time. This may well speed up drawing conclusions about a concept, but is more difficult to manage and provides no new information when none of the variations are correct.

One must use some strategy in forming concepts. The recognition of an object or understanding of an idea occurs in a fraction of a second, but the classification of "right" or "wrong" requires from several seconds to minutes. Concept formation, however, requires both the identification of attributes and classification of the object or idea being examined. Young children use scanning strategies, which appears to be the earliest developmental approach, while older children (8 or so) can be taught the focusing strategy (or will develop it on their own) since it appears to be the most efficient for concept attainment.

Another contributing factor, and a relatively complex one, to the problem of understanding concept development of individuals in practice is the fact that most of us develop learning or cognitive styles that emphasize some learning abilities over others. While more will be said about this variable in a later part of this panel, suffice it to say that as a result of our heredity, background, life experiences, and socio-cultural influences, we begin to develop preferences for modes of information processing and problem-solving early in life. Through socialization in the family, school and community and, as would be expected, molded to a great extent by our individual personality characteristics, individuals develop consistent and distinctive cognitive styles.

A third, and more difficult, problem to resolve in enhancing concept formation is the difference between the knowledge gained from laboratory, experimental, and research studies of human concept formation on one hand, and how concepts are developed in real life on the other. In many concept areas there are few, if any, instances where there are systematic examples presented for evaluation. Further, there are rarely any authoritative responses to provide feedback as to correct or incorrect attributes for developing concepts. Although we may strive to provide illustrations, examples, and information through our families, schools and society, it is not always clear how we develop relatively simple concepts such as addition, proper nouns, and Jeffersonian Democracy, to say nothing of honesty, love and beauty. Even more confusing is the fact that research studies find little difference between the concept development level of college students and 7-year-olds in several critical areas (Arons, 1983). A final blow to complacency about concept formation comes from studies which find that many adults apparently use no strategy *at all* in developing concepts.

Concept Formation Conclusions

Despite decades of research, a large body of data, and a respectable array of sound theories, we continue to be uncertain of how to foster, much less accelerate, concept formation. There are, however, several dependable conclusions which may be used as guidelines:

1. Examples should be both positive and negative, and as distinct as possible. The concept of "square" is easier to develop than the concept of "dress in good taste," due to the more precise definition and demarcation between positive and negative examples.
2. The more positive examples which can be provided and the greater frequency with which they are used increases the likelihood that the concept will be mastered.
3. In introducing a concept, and during early stages of concept formation, positive instances are more effective, with negative instances introduced later. Both positive and negative examples, however, are necessary for final concept development.
4. When using both positive and negative instances or examples, they should be presented simultaneously

or side-by-side (if objects) or close together (if ideas). Multiple examples also help.

5. The fewer the irrelevant attributes, the easier concepts develop. Simple drawings, clear verbal descriptions, and explicit but brief examples help concept formation. Attention and focus always should be on the relevant attributes.
6. One's skill in concept learning increases with age. Older children form concepts easier than younger ones, and adults have greater experience, general fund of information, and facility in learning concepts.
7. Concept formation, like other learning activities, is related to anxiety. A slight increase in anxiety increases concept formation, while higher levels of anxiety have a disruptive effect on learning. This is more the case as the complexity of the learned concept increases.
8. If the learner verbalizes to himself/herself as the concept is learned, the concept is more readily learned and applied to new situations (transfer).
9. Handling objects and materials (when relevant and possible) increases formation of concepts as does more active involvement in the process (discovery learning, active learning, interactive learning).
10. Completeness of feedback and teaching concepts which are relevant and related to prior knowledge and current activities (i.e. not in isolation) enhances concept formation and insures greater transfer to new instances (developmental stage, spiral curriculum, course scope and sequence).
11. Multiple teaching methods and multi-sensory approaches insure more complete concept learning, enhance transfer, and provide opportunities for varied individual learning styles.
12. Finally, although not conclusively, it appears that when instances are provided by a teacher with an

> organized system of presentation, concept learning is more rapid and complete than when the learner selects the examples and controls the pace and process.

The coincidence of accelerative learning principles with those which have been found to enhance concept learning are several. Further, accelerative methodology appears to relate to the more critical issues in concept formation. Even cursory inspection will show that elements of a positive, encouraging atmosphere, positive suggestions, teacher and method credibility, multi-sensory/whole-brain learning, and active presentation with non-critical correction focus directly on those features which relate to the essentials fo concept formation. Further, relaxation and mind-calming reduce anxiety while imagery increases recall and long-term memory. Finally, accelerative techniques provide the fundamental and intrinsic elements whicn insure success in learning and which will heighten self-concepts of students, both young and old.

* * * * * *

References

Arons, A.B. (1983). Achieving wider scientific literacy. *Daedalus, 11*(2), 91-122.

* * * * * * * * *

L'accélération de la formation de concepts

Au Congrès de SALT 1986, un jury de spécialistes sur "l'accélération de l'aptitude à la conceptualisation chez les étudiants universitaires", s'est concentré sur les programmes et les méthodes utilisées pour améliorer l'étude

des concepts placant une emphase speciale sur les études des cycles superieurs. Ce mémoire résume la presentation initiale qui, accompagnee d'illustrations et exemples absents de ce rapport, servit a introduire, définir et profiler le developpement conceptuel et ses étapes, ainsi qu'à resumer les conclusions des recherches effectuées sur l'acquisition conceptuelle, et lier les principes de SALT à l'étude des concepts.

Formung des accelerating Konzepts

Eine Diskussion über "accelerative konzeptionelle Fähigkeiten für Collegestudenten" auf der SALT-Konferrenz 1986 legte den Schwerpunkt auf Programme und Methoden zur Verbesserung des Konzeptlernens mit besonderer Betonung auf höhere Bildung. Dieser Artikel faßt den ursprünglichen Vortrag zusammen, der begleitet von Illustrationen und Beispielen, welche in diesem Bericht nicht aufgeführt sind, dazu diente die Konzeptentwicklung vorzustellen und zu definieren, Stufen der Konzeptentwicklung auszuführen, Forschungsergebnisse in der Konzeptaquisition zusammenzufassen und SALT Grundsätze mit dem Konzeptlernen in Beziehung zu setzen.

Formación del concepto acelerado

Un panel de "Habilidades conceptuales de acelerado, en Estudiantes Universitarios" presentado en la conferencia de SALT 1986, enfocados en programas y métodos utilizados para realzar el concepto del aprendizaje con mayor énfasis en la educación superior. Este reporte, resume la presentación inicial en el cual no están incluidas las ilustraciones y ejemplos que sirvieron para presentar y definir el desarrollo del concepto, una idea general y las etapas del

desarrollo, resumen las conclusiones de las investigaciones en la adquisición del concepto y relatos principales en el concepto con SALT.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3).

The Brain and Accelerative Learning, Part II: The Brain and Its Functions*

James D. Hand
University of Illinois
College of Medicine at Rockford

and

Barbara L. Stein
North Texas State University

Abstract. The relationship between various types of brain functions and learning has interested educators for the past 15-20 years. The intricacies of brain development at the microscopic level provide an insight regarding this fascinating organ. On a larger scale, memory appears to be a phenomenon widely spread among cortical regions. Both short-term and long-term memory storage are discussed. Much has been written about left and right hemispheric functions. The most recent research indicates that this specialization, popularized by some in the terms "right-brained people" and "left-brained people", does not hold up under scrutiny. The triune brain concept of MacLean is discussed, along with the effects of the limbic system on learning and memory.

* * *

---

* Paper presented at the May, 1985 SALT Conference in Washington, D.C., updated to 1986 findings.

A Microscopic Look at the Brain

The normal human brain weighs about three pounds. Within this marvelous structure we have approximately *100 billion nerve cells.* Each of these neurons receives inputs from 100 to 1,000 other neurons across 1,000 to 10,000 relay points called synapses. This means that there are, as a conservative estimate, some *100 trillion connections* between neurons in the brain. These are difficult numbers to comprehend fully. If you spent one dollar per second, sixty dollars per minute, $3600 per hour, it would take you 32 years to spend a billion dollars. The U.S. government obviously does this much more quickly. To spend $100 billion you would have to start in 1200 B.C. One hundred billion is, to say the least, a very large number whether we are referring to dollars or neurons. One hundred *trillion* seconds ago equates to 3,200,000 years, about the time man was roaming the savannah grasslands in small bands gathering grains and berries. This complex interconnection of message-bearing relays makes the human brain by far the most intricate "machinery" known at this time. Humans are born with virtually all the brain nerve cells we will ever have. We begin producing them in large numbers at about 25 days gestation. Neurons are generated at the astonishing rate of 250,000 - 280,000 per minute as the fetus develops over the next eight months (Cowan, 1979).

To communicate with the rest of the body, the 100 billion neurons of the brain are connected with 10 billion neurons in the brainstem and spinal cord, and a "mere" one million neurons stretching across the remainder of the body (Hubel, 1979). All these are immature nerve cells in that, at birth, they are almost naked and have made few connections with the other neurons with which they will ultimately communicate.

There is some evidence that learning occurs in utero; consequently we can confidently state that many neuronal synapses have formed. These are, however, proportionately few of the 100 trillion which will be formed later in life.

At maturity, most neurons are coated with a myelin sheath, a coating of insulation, around the axon (or output end). The input centers (dendrites and the cell body) remain naked. The coating process takes from about 37 weeks gestation (7 1/2 months in utero) until age 20 to complete. This is an important process. Brain cells are packed tightly together, separated by a thin film of fluid. Signals coming into the cell through the dendrites or cell body must be passed along the axon to the next cells in the network. While the axons are partially naked, the message travels primarily along the axon itself. When insulated, or myelinated, small gaps remain in the sheath, spaced approximately one millimeter apart. The message passing along the axon travels by jumping from gap to gap where the extra-cellular fluid makes direct contact with the axon. Insulated nerve cells, then, conduct impulses faster than unmyelinated ones (Stevens, 1979).

The third grade teacher, fresh from college with fully myelinated axons, sometimes has difficulty in judging how long it will take the students to complete a homework assignment. Not only does the teacher have more of the neuronal connections already established to complete the task, the teacher has neurons which transmit messages faster. While the teacher may be able to work 50 novel math problems in 15-20 minutes, it could take the eight year old child two or more hours to complete the task. This is not because the child is "dumb", but because the child is less well equipped at age eight than is the teacher at age twenty-two. At the junction, or synapse, between neurons chemical release is triggered by the electrical charge travelling down the axon of the first cell. If the chemical passes on the message, or excites the next cell, it is called an excitory chemical. If it blocks the message, it is termed inhibitory. Since there may be multiple or no connections with a nearby cell, there are four possibilities resultant:

1. All connections excite the next cell;
2. all connections inhibit the message to the next cell;
3. some excite and some inhibit;
4. the two cells have no direct connection.

These gradations of message networking increase the complexity of the 100 trillion synaptic connections. With at least 100-1000 neurons passing and inhibiting messages to the receiving neuron, it is easy to see how intricate the process is which will determine whether the receiving cell will pass the message onward. As the learner interacts with the environment (teacher, peers, texts, etc.) proteins present in nerve cell membranes apparently enable the activation of very large numbers of neurons simultaneously. The more sensory channels used to input the information, the greater the number of storage sites activated (Hyden, 1977). When learning starts, there is an increased synthesis of messenger RNA in nerve cells, which induces production of certain proteins and molecular pattern changes in brain cells. As Hyden points out:

> The working hypothesis is that protein differentiation, caused by experience and learning, will secure the concomitant activation of all the neurons which have undergone a similar differentiation and on the same stimulus. It does not matter in what part of the brain the neurons are

> located [illegible] at learning, neurons become highly active. The learning mechanism of the brain in the first hand is *active,* not *reactive* as in a conditioned system (Hyden, p. 215).

When a person learns his/her native language and no other, there is an identifiable section of the brain in which it is housed. When a second language is learned after puberty, it must be stored in another place. This appears to be because the neuronal connections in the first site are already taken up by the native language. Neurobiologically, B.F. Skinner was probably accurate when he pointed out that it is more difficult to unlearn something (reworking the established neuronal connections) than to learn it. If we take a child, whose brain has many undedicated synaptic possibilities, and teach the child two or more languages during the formative years, we find that all of those languages can be found in the same general area. While this is an indication of the plasticity of the youthful brain, it is not an indictment of the mature brain. There is ample evidence that adults can learn. This may be because the mature brain can disconnect and reconnect neurons to accomplish this, although it takes longer than initial connection, although this point is as yet unproven. Evidence of this comes from research with stroke victims who are re-learning how to walk, talk, write and perform other functions by miming patterns from normal brains shown on oscilloscopes.

Short-Term Memory and Its Pitfalls

For the purposes of this discussion, short-term memory refers to storage of information lasting from one-quarter of a second to one hour without rehearsal. With rehearsal, short-term memory can be maintained almost indefinitely, but usually does not last beyond eight hours due to lack of practice. When a person actively thinks or contemplates events (i.e., is consciously aware), even if this incorporates long-term storage, the short-term memory is being employed.

Unless short-term memories are committed to long-term storage, they are quickly lost. Short-term memory is labile, continually undergoing chemical breakdown. Because of this, there are several pitfalls involved with short-term storage of the taxon variety: masking, capacity limitation, short duration, item and order information loss, and recency effects (O'Keefe and Nadel, 1978). Masking occurs when facts, concepts or principles being learned are similar in some respect (mass vs. weight or Martin Luther vs. Martin Luther King, Jr.). The first learned item is generally stronger, having been rehearsed. The teacher must take care to separate these concepts in the learner's mind.

Duration involves the times indicated at the beginning of this section. Short-term memory is just that: short-term. If the instructor expects the learner to maintain the information long-term, the structure for long term storage must be instituted (see Long-Term Memory).

Recency refers to the effect which can be stated as "that which was rehearsed more recently will be stronger than that rehearsed less recently." This is due to a lower synaptic threshold (easier transmission) for the most recently practiced information. This effect is most easily seen in students who cram for relatively short, non-comprehensive examinations (see Part III: Suggestions). What they just rehearsed blocks what they crammed an hour ago. Capacity limitation is severe with short-term memory, generally limited to seven discrete items, plus or minus two. The pitfall here is that students can juggle enough information in short-term memory to pass most weekly or biweekly tests on individual chapters, units or modules, and this can be done without committing the information to long-term memory.

Item and order information frequently is lost rapidly from short term memory. An example of item loss is forgetting an appointment before it is written down or forgetting the name of the third planet from the Sun. An example of order loss is confusing the sequence of recent presidents (Nixon, Carter, Ford, Reagan?).

Long-Term Memory: Taxon and Locale

Information processed into long-term storage is encoded in multiple areas of the brain, because experiences have multiple sensory aspects (Gazzaniga and LeDoux, 1978). Much of the human brain has been mapped for functions controlled and type of information processed at given sites. Pribram (1979) and others have found a positive correlation between areas activated during both intake and recall, in terms of latency (delay of neuronal activity) and amplitude (voltage of the encephalogram). Those areas stimulated during intake match those activated during recall. And the more types of stimuli, the more sites used to store the information.

One framework for reviewing long-term memory systems is that proposed by O'Keefe and Nadel (1978), involving the taxon (rote) and locale (contextual) systems. The taxon system is categorical, lacks a spatio-temporal context, and decays greatly over time if the information goes unrehearsed. Memorizing the "I before E" rule or the names of the presidents in serial order would fall within the taxon long-term storage system.

The locale system, on the other hand, is based on context. It employs time and space coordinates, multiple channels for storage and retrieval of any or all of the relationships involved in the specific memory. Items stored in the locale long-term system are relatively permanent. Single occurrences, if they are greatly important or unusual to the person, are also stored here because they are contextual. The time-space coordinates attached to these memories allow for minimal interference between different representations of the same item. For example, we know we are looking at George Washington whether we see his face frontally or in profile. Memories which rely primarily on verbal communication which is nearly context-free will be consigned to the taxon memory system, subject to considerable decay if not used often. By adding pictures, sounds, aromas, etc. a context is built around the verbal, causing the memory to be placed within the locale system.

Right-Left Hemispheric Brain Functions

Research on left and right hemispheric differences began in the last century with the work of Broca, who discovered the speech center, and Wernicke, who discovered the area which interprets speech. Among the myriad of scientists investigating the capacities and dominance of each hemisphere, Kimura (1973) seems to have made one of the more important discoveries: that, in the normally functioning brain, both hemispheres *share* in mental activities. Scientists have yet to discover any one higher intellectual function controlled entirely by one hemisphere. Some scientists still refer to "the dominant hemisphere," meaning the side of the brain primarily responsible for language processing. This seems to be changing rapidly, however.

In a recent interview, Levy (1975), a protege of the Nobel laureate Roger Sperry, stated:

> One of the ideas I had when I was still working with Roger Sperry was that the right hemisphere of the human brain attends to and represents the holistic, configurational aspects of its experiences and that the left hemisphere is more analytic. The right hemisphere synthesizes things into a global form, whereas the left seems to pay attention to specific and detailed features. This is now a popular notion, *but I think it may be wrong.* Reality, in that instance, may have been playing a game with us (p. 97) (emphasis added).

Levy states that she now believes that both hemispheres hold the capability to synthesize information separately within the specific domain of each.

> It seems possible that when a task is within the specialized domain of a hemisphere, then information is synthesized into some higher order configuration, and that feature-by-feature processing is compelled for the unspecialized hemisphere that lacks the capacity for deriving the emergent synthesis. The way each hemisphere deals with incoming information - how it encodes it - depends on what sort of information it is and what the hemisphere can do with it. (p. 97)

When Levy speaks of the "specialized domain" of a hemisphere, she is referring to major capabilities it has that are only minor capacities of the opposite hemisphere. From the popular listing of these domains we should now delete analysis of detail and sequence information from the list of left brain specialties.

Left Hemisphere	*Right Hemisphere*
1. verbal, linguistic	1. intonation, inflection
2. ideation (abstractions)	2. pictorial and pattern sense
3. conceptual similarities	3. visual similarities
4. sense of time	4. location in space
5. controls right side of body	5. controls left side of body
6. numerics, quantities	6. melodic perception
7. logic	7. poetic processing
8. outlook	8. insight
9. geometric configurations	

This listing holds for over 90% of the tested right-handed males from Western cultures. There is considerable variation when investigations involve females, left-handed persons, youngsters and those from non-Western cultures. Educators should be aware that, even in the United States, the list above holds true for less than half of the population.

The Triune Brain

The concept of triune (three-part) brain is one of the more exciting developments in recent brain research. MacLean (1973; Holden, 1979) refers to three separate and distinct functional portions of the brain: the reticular formation (sometimes called the reptilian complex or R-complex) including the midbrain, pons, medulla oblongata and reticular activating system; the limbic system, which includes the amygdala, hippocampus, hypothalamus, thalamus and pituitary bodies; and the neocortex or outer mantle of the brain. Each of these three portions are interconnected by neuronal pathways, yet are neurochemically, and functionally distinct from one another. The behavior displayed by a person may be determined by any one of these regions at any given time.

The R-complex plays an important role in aggressive behavior, ritualistic behavior, territoriality and the establishment of social hierarchies. Basic needs and sexual drive are also programmed into this portion of the brain.

The limbic system controls strong and vivid emotions, attitudes, prejudices, and motivations not tied to basic biological needs. The hypothalamus and hippocampus control the formation of long-term and short-term memory. The hippocampus also controls certain emotional states. The pituitary controls the endocrine system. Imbalance in endocrine production alters moods, which provides an important clue to the relationship between learning/memory, attitudes and mental states. MacLean (1973) states that malfunctions of the limbic organs can lead to rage, fear, or sentimentality that have no readily apparent external cause.

The relatively massive neocortex surrounds the limbic system, which in turn sits atop the reticular formation (R-complex). This region controls human intellectual functions such as logic, the quest for knowledge, most language processing, and some other indicators of intellect. Fully 70% of the 100 billion neurons in the brain are located in the neocortex.

The lower two regions of the Triune Brain control pulse, heart rate, blood pressure, respiratory rate and body temperature through the hypothalamus (the ultimate controller) and the reticular activating system within the R-complex. These same regions control the following:

* submission/aggression
* mass migration
* sexual courtship and display
* ganging up on the weak and the new
* follow-my-leader rituals

- defending territory
- hunting/gathering
- ritualistic greeting
- bonding/protecting/caring
- playing
- flocking
- rejoicing/sorrowing

These regions are unable to directly verbalize meaning beyond emotive expressions. If one considers this list while recalling the behaviors of students, teachers, administrators, and staff in our schools one can see how many of the daily activities of people are projected by MacLean to come from the two lower regions of the brain. All these behaviors, so pervasive in daily life, interfere and often conflict with the intellectual activities of the neocortex.

The story becomes even more intricate when one considers the following. Sensory inputs from seeing, hearing, touch, and taste go through the thalamus, which apparently translates the message and sends it on to appropriate sections of the neocortex. Each primary receiving area of the neocortex (totaling about one-fourth of this region) connects to associative areas, which integrate sensory inputs from two or more primary areas. These, in turn, eventually connect with the hippocampus or amygdala, or both. The hippocampus and amygdala are the primary influences on the hypothalamus from the cerebrum. The hypothalamus controls the involuntary muscles surrounding the intestines, airways, arteries and veins, urinary tract, and the glands. It also, as stated previously, controls blood pressure, heart rate and respiratory rate. As we look at the loop leading from the initial stimulation of the limbic system from sensory inputs, to the neocortical areas and back to the limbic system, consider this:

- Amygdala controls rage and fear
- Hippocampus gauges expectation and reality, stimulates and controls short-term memory; and inhibits the reticular activating system, thereby influencing tension/relaxation
- Hypothalamus controls the fight/flight response and aspects of both short-term and long-term memory.

Intellectual activity is obviously hampered by rage, fear, disparities between expectations and reality, tension, and feelings triggered by fight-or-flight situations. To overcome these negative influences, as promoted by SALT techniques, the following would seem to be in order:

- pleasant surroundings
- recall of best performance
- relaxation/peacefulness
- emphasis on positives
- recall for times when learning was easy and enjoyable.

It has been pointed out by Nadel, among others, that "anticipation of the future, anxiety, some language processing and other indicators of intellect are located *outside* the neocortex. Over emphasis upon the leading role of the neocortex in intelligence is but one of the . . . shortcomings of the triune brain idea." Other methods are discussed in Part III.

Beta Endorphins and Enkephalins

The endorphins and enkephalins are the brain's natural opiates. They are generated when we feel good about something or someone, or when we are extremely relaxed, as found in isolation tank experiments (see Brain/Mind Bulletin, 9(4), January 23, 1984). As shown by the previous discussion, emotions and learning are tied inextricably within the limbic system. When endorphins and enkephalins are produced, the person feels good - a natural "high". This process, allows intellectual pursuit to progress more readily than when negative feelings prevail. To be positive, perhaps we should guide our students toward comfort management rather than stress management.

In Part III we will discuss educational implications of the first two parts and how people function in the educational environment.

* * * * * *

References

Cowan, W.M. (1979). The development of the brain. *Scientific American, 241*(3), 113-133.

Dunant, Y. and Israel, M. (1985). The release of acetylcholine. *Scientific American, 252*(4), 58-66.

Gazzaniga, M.S. & LeDoux, J.E. (1978). *The Integrated Mind.* New York: Plenum Press.

Geschwind, N. (1979). Specializations of the human brain. *Scientific American, 241*(3), 180-199.

Hand, J.D. (1982). Brain functions during learning. In D.H. Jonanssen (ed.), *The Technology of Text,* Englewood Cliffs, N.J.: Educational Technology Publications, 91-119.

Holden, C. (1979). Paul MacLean and the triune brain. *Science, 204*(4397), 1066-1068.

Hubel, D.H. (1979). The brain. *Scientific American 241*(3), 45-53.

Hyden, H. (1977). The differentiation of brain cell protein, learning and memory. *BioSystems, 8*(4), 213-218.

Iverson, L.L. (1979). The chemistry of the brain. *Scientific American, 241*(3), 134-149.

Kimura, D. (1973). The asymmetry of the human brain. *Scientific American 227*(3). 70-78.

Levy, J. (1985). Jerre Levy: Interview. *Omni, 7*(4), 68-70, 97, 99-102.

MacLean, P.D. (1973). *A Triune Concept of the Brain and Behavior.* Toronto: University of Toronto Press.

Nadel, L. (July, 1987). *Personal Communication.*

Nauta, W.J.H. & Feirtag, M. (1979). The organization of the brain. *Scientific American, 241*(3), 88-111.

O'Keefe, J. & Nadel, L. (1978). *The Hippocampus as a Cognitive Map.* New York: Oxford University Press.

*** *** ***

Le cerveau et l'apprentissage accéléré, Partie II: Le cerveau et ses fonctions

Les relations entre les differents types de fonctions du cerveau et de l'apprentissage ont interesse les educateurs despuis les dernieres quinze à vingt années. Les complexites du developpement du cerveau au niveau microscopique fournissent un aperçu sur ce fascinant organe. A une plus grande échelle, la mémoire apparait comme un phenomène largement répandu parmi les régions du cortex. L'emmagasinage, à la fois de la mémoire à court terme et de la mémoire à long terme est discuté. On a beaucoup écrit sur les fonctions hémisphériques droites et gauches. Les recherches les plus récentes indiquent que cette spécialisation popularisée par certains en des termes tels que "personnes travaillant avec leur côte droit" et personne travaillant avec leur côte gauche", ne résiste pas à l'observation. Le

concept du cerveau triune de MacLean est discute ainsi que les effets du systeme limbique sur l apprentissage et la memoire

Das Gehirn und accelerative learning. Teil II: das Gehirn und seine Funktionen

In den vergangenen 15 bis 20 Jahren fand die Beziehung zwischen verschiedenen Typen von Gehirnfunktionen und Lernen das Interesse der Erzieher. Die Kompliziertheiten der Gehirnentwicklung auf mikroskopischer Ebene erlauben einen Einblick in Bezug auf dieses faszinierende Organ. In einem größeren Masstab scheint Gedächtnis ein weit über cortical Regionen verstreutes Phänomen zu sein. Sowohl kurzzeitige als auch langzeitige Gadächtnisspeicherung werden diskutiert. Es wurde viel über links- und rechtshemisphärische Funktionen geschrieben. Die neueste Forschung indiziert, daß diese Spezialisierung, von manchen unter den Begriffen "linkshemisphärische" und "rechtshämisphärische Leute" populär gemacht, unter kritischer Betrachtung nicht standhalten kann. MacLeans dreieiniges Gehirnmodell wird zusammen mit den Effekten des limbischen Systems auf Lernen und Gedächtnis diskutiert.

El cerebro y el Aprendizaje Acelerado. Parte II: El cerebro y sus funciones

La relacion entre los varios tipos de funciones cerebrales y el aprendizaje ha interesado a los educadores en los ultimos 15-20 años. La dificultad del desarrollo del cerebro a nivel microscopico nos provee de perspicacia con respecto a que es un organo fascinante. En una gran escala, la memoria parece ser un fenomeno ampliamente extenso en la region cortical

Fueron discutidos el almacenamiento de la memoria en corto y largo plazo. Mucho se ha escrito sobre las funciones del hemisferio izquierdo y del derecho. La investigacion mas reciente indica que esta especializacion, popularizada por algunos términos como "gente cerebral-derecho" y "gente cerebral-izquierdo", esto no se puede sostener hasta el escrutinio. El concepto de las tres partes del cerebro de MacLean fue discutido, junto con los efectos del sistema limbico en el aprendizaje y la memoria.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3)

A SALT Pilot Study
College Developmental Mathematics

Allyn Prichard
Kennesaw College

Abstract. Several SALT variables (mind calming, relaxation review, teacher verbal suggestions, unusually challenging assignments) were singled out for study in an experimental developmental studies college mathematics class. The experimental (SALT) group scored significantly higher than the control group on the end-of-term examination.

* * *

Introduction

Mathematics 098 is the first of two sequential developmental mathematics courses offered at Kennesaw College. Together with its successor, Math 099, it is designed to prepare students whose math skills are rusty (adults returning to college at mid-life) or undeveloped (recent high school graduates who did not pursue a college-prep curriculum) for the regular, entry level freshman math courses.

Students with low SAT math scores combined with low scores on a locally administered mathematics placement test are enrolled in Math 098 or Math 099 according to the amount of remediation deemed necessary. Thus Math 098 represents the lowest level of training in mathematics at Kennesaw: it includes operations involving fractions, operations with signed numbers, the laws of exponents, operations on polynomials, factoring, radicals, solving first degree equations, and applications. This material is roughly equivalent to high school Algebra I.

Math 098 students may be characterized as possessing at least one of the characteristics that typically correlate with low scores on the SAT-math subtest. Low aptitude, inadequate training, poor time management and study skills, low motivation, and math-phobia all affect this student population to some degree.

Method

An acceptable definition of a SALT teacher is as follows: one who orchestrates all aspects of the classroom atmosphere in order to create maximum suggestive impact for the purpose of freeing the mind's learning reserves. There are seven sources of suggestion available for the teacher to use to that end: teacher verbals, teacher non-verbals, classroom decor, nature and sequencing of activities, nature and sequencing of materials, among-pupil suggestion, and pupil auto-suggestion. This pilot study did not attempt to include all of the available sources of suggestion, indeed, it should be considered as a dry run for the instructor (the author) who had never before attempted to teach algebra with SALT-type methodology under controlled experimental conditions.

The experimental variables selected for manipulation in this study were: a pre-instructional guided imagery activity (mind calming) carried out without music, a two part relaxation review covering major lesson topics, a strong positive-suggestive atmosphere characterized by teacher verbal assurances that not only did the class have the ability to do well but was actually doing so, and special extra-credit assignments (challenge problems called brain teasers), described as being "appropriate only for classes with special potential in mathematics."

The sequence of activities in a typical experimental (SALT) class (meeting for three 85-minute sessions per week) was as follows.

Activity	*Minutes*
1. Class business (roll call, announcements, etc.)	5
2. Mind calming	5
3. Review of previous lesson, including teacher demonstration of difficult problems	15-20
4. Presentation of new material	25-30
5. Small group work	20
6. Two part relaxation review	10

The control group also met on a M/W/F, 85-minute period schedule. The activities carried on there were similar to those listed above, except #2 and #6 were eliminated, no special verbal suggestions were given concerning the abilities of the class, and no extra "brain teaser" assignments were given.

Mind Calming

This activity is an integral part of SALT. Students closed their eyes, focused their attention on their breathing, and relaxed as they listened to the instructor read from one of seven specially prepared scripts, each designed to both promote relaxation and to evoke visual imagery.

These seven scripts were alternated in order to avoid boredom. Six of the scripts described fantasy trips to familiar places, including a waterfall, a spring-time trip though a field of flowers, and a bird's eye view of an ocean beach, complete with suggestions relating to the sounds (seagulls and surf), sights, and smells (fresh air, salty water) of the seashore. The remaining mind calming script consisted only of suggestions for relaxation. It encouraged each student to create his own favorite relaxing place where he could enjoy whatever spontaneous imagery arose without hearing a voice guiding that flow. As the quarter progressed, this proved to be the most popular mind calming exercise. Once students began to realize the benefits of relaxation/visualization, they became eager to take control of the activity in order to make best use of their personal relaxing time.

Relaxation Review

This activity was also carried out only in the SALT class: a two part review of new material presented that day, the first part without music, the second with a classical music background. In part one, students closed their eyes and relaxed for 1-2 minutes (many of them indicated that they travelled mentally to their favorite relaxing place). Then they opened their eyes and simultaneously listened to the instructor and read along with him in their notes as he summarized the day's lesson. Care was taken to review definitions, theorems, and major points which had been written on the board and thus were to be copied in class notes.

In part two of the review, students closed their eyes and relaxed again while the instructor reviewed the same material. The same definitions, theorems, and major points were repeated; care was taken to pause between each to allow for the formation of appropriate images in the students' minds.

Part two of the review was conducted over a taped music background featuring the baroque works of composers such as Corelli, Bach, Vivaldi, and Telemann. Students were instructed not to try to remember, instead they were to simply let go, immersing themselves in the music as if they were at a concert, allowing the music to carry the information borne by the instructor's voice into their memory with no special effort on their part. Any accompanying visual images related to the math lesson were to be experienced, then allowed to fade away into their unconscious minds as the instructor moved on to the next item in the review.

Results

The final examination for both experimental and control classes was a department-wide, locally developed 50 item multiple choice test. Results were as follows:

	Mean
Experimental (SALT) Class	39.68 (n=28)
Control Class	34.38 (n=21)

A *t*-test of the significance of the difference (5.3 points) between the two means yielded a *t* value of 2.27, significant at the .05 level.

In addition to higher final examination scores, retention and percent passing were higher in the SALT class. Twenty eight of 30 students completed the SALT class; 23 of them (77%) passed. Only 21 of 30 control group students completed the course; 15 of them (50%) passed.

Discussion

The fact that the experimental (SALT) class significantly outscored the controls was a hoped for outcome, though it was by no means considered inevitable. The reader may realize that suggestive tools such as intonation, role playing, and positive-suggestive classroom decor were not used at all, while use of other tools such as teacher non-verbals and metaphor was spontaneous and only occasional rather than constituting a planned, integral part of the classroom routine.

It may be accurately said that the author chose to begin SALT applications in developmental mathematics at a manageable pace, choosing to carefully control use of some suggestive tools before moving on to others in later classes.

In subsequent Math 098 classes, SALT experimentation will include more extensive use of music, specifically during the introduction of new material, during group work, and during the first part of the relaxation review. Intonation will be used during the review and specific emphasis will be placed on teacher non-verbals.

The author believes these data are supportive of the general lines of investigation SALT has pursued over the years and that further research of the variables involved in the suggestion/de-suggestion process will yield much valuable insight into methods necessary for the activation of the mind's reserves.

* * *   * * *

References

Bancroft, W.J. (1976). The Lozanov language class. *Journal of the Society for Accelerative Learning and Teaching, 1*(1), 48-74.

Bancroft, W.J. (1983). Yoga factors in accelerative learning. *Journal of the Society for Accelerative Learning and Teaching, 8*(3&4), 115-127.

Caskey, O. (1980). *Suggestive Accelerative Learning and Teaching*. Englewood Cliffs, NJ: Educational Technology Publishers.

Haynes, J.R. (1973). On the function of visual imagery in elementary mathematics. In W.G. Chase (ed.), *Visual Information Processing*. New York: Academic Press.

Prichard, A. & Taylor, J. (1980). *Accelerating Learning*. Novato, CA: Academic Therapy Publications.

Richardson, A. (1969). *Memory Imagery*. New York: Springer.

Samuels, M. & Samuels, N. (1975). *Seeing with the mind's eye: The history, techniques and uses of visualization*. New York: Random House/Bookworks.

Schuster, D.H. & Gritton, C.E. (1985). *Suggestive Accelerative Learning Techniques: Theory and Applications*. Ames, IA: Research Into Mind.

Staiger, E. (1984). The mechanics of script preparation for accelerative learning and teaching. *Journal of the Society for Accelerative Learning and Teaching, 9*(1), 21-23.

Taylor, B. (1984). Low budget introduction of elementary accelerative mathematics. *Journal of the Society for Accelerative Learning and Teaching, 9*(3), 183-194.

Wenger, W. (1984). Demonstration in spontaneous visual imagery. *Journal of the Society for Accelerative Learning and Teaching, 9*(4), 307-313.

*** *** ***

Une etude pilote de SALT sur les mathematiques developpementales

Plusieurs variables furent isolees dans une etude experimentale du developpement d'une classe universitaire de mathematiques. (L'apaisement de l'esprit, la decontraction, les suggestions verbales du professeur, des devoirs particulierement provocateurs). Les resultats du groupe experimental SALT furent plus eleves que ceux du groupe de contrôle, de manière significative, à l'examen semestriel.

Eine SALT- Pilotstudie: College Entwicklungsmathematik

Einige SALT- Variablen (Gedankenberuhigung, Überprüfung der Entspannung, verbale Suggestionen des Lehrers, außergerwöhnlich herausfordernde Aufgaben) wurden herausgenommen für eine Studie im Mathematikunterricht eines Colleges experimenteller entwicklungsorientierter Studien. In der Schlußprüfung schnitt die experimentelle (SALT) Gruppe erheblich besser ab als die Kontrollgruppe.

SALT Estudio Piloto: Desarrollo en Matematicas en la Universidad

Diferentes variables de SALT (mente calmada, repaso con relajacion, sugestion verbal del maestro, insolito desafio con las asignaturas) fueron distinguidas para estudiar en desarrollo experimental en clases de matematicas en la universidad. El grupo experimental

(SALT) ha tenido significativamente un puntaje mas alto que el grupo control, al fin del termino del examen.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3).

Superlearning and Retention

Gary F. Render
University of Wyoming

and

Lynn D. Anderson
Northern Michigan University

Abstract. Retention of suggestopedically learned vocabulary definitions was studied by giving posttests either 1, 2, 3, or 4 weeks after learning. Subjects were university students in an undergraduate class on learning. As compared with the classic Ebbinghaus curve of forgetting, the retention curve of suggestopedically learned vocabulary was better and linear.

* * *

Introduction

Georgi Lozanov, a Bulgarian scientist and doctor, developed Suggestology and the Suggestopedic method in an effort to tap human potentials which he believed are in reserve. The method was adapted for use in this country and generally followed the pattern outlined in Ostrander, Schroeder and Ostrander's *Superlearning* (1979).

A review of the research on the use of Superlearning in the United States reveals that studies have either dealt with the effectiveness of the method or the essential nature of each of the components. Lozanov's method has proven to be effective across disciplines and at all educational levels. Vannan (1979) used Superlearning in an elementary science methods course and found a substantial increase (11.3% to 78.8%) in the percentage of A's earned in the course. Gritton and Benitez-Bordon (1976) used Superlearning with subjects whose achievement scores were significantly ($p < .01$) lower than the control group scores at the beginning of the school year. In one semester, the experimental group showed a significant ($p < .01$) gain over the control group. Prichard and Taylor (1976) showed favorable results in working with elementary remedial reading students.

A study by Render, Hull and Moon (1984) isolated the effects of relaxation and the playing of Baroque music during testing on subjects' scores. These variables had no significant effect on scores, which indicated that the individual variables aren't sufficient to produce significant results. Schuster and Mouzon (1982) experimented with the type of music played during learning, and found that the use of Baroque music resulted in 24% higher acquisition scores for experimental subjects.

These studies have established the apparent effectiveness of Superlearning, but none of them specifically addressed the retention rates resulting from the use of the method. This study was designed to determine if the use of Superlearning to teach rare English words would produce retention scores significantly different from a 'normal' forgetting curve as suggested by Ebbinghaus (Hunter, 1970).

Procedure

Six sections of the undergraduate course, Foundations of Learning, at the University of Wyoming, were selected for this study. The course is required for all education majors and most students are sophomores or juniors. All of the sections received the same treatment but each section was randomly assigned to be tested for retention one, two, three, or four weeks following treatment.

The treatment procedure follows:

1) A pretest was given over a list of twenty-five rare English words. (See Appendix).
2) Subjects were given a list of those words and their definitions. The experimenter read those words and definitions aloud as subjects read silently with the experimenter.
3) A commercial Superlearning tape was played to relax subjects' minds and bodies. At the end of the tape, subjects were asked to remember an early pleasant learning experience.
4) An investigator-prepared tape was used to present the words and definitions using voice intonation, alternating normal, soft, and loud tones. Words were presented to the beat of Baroque music (4/4 time, approximately 60 beats/minute). A word and its definition were presented during a four beat (four second) period, followed by a four beat pause, and so on. Subjects were asked to breathe rhythmically, i.e., to hold their breath while words and definitions were given and to inhale or exhale during pauses.
5) A posttest was given to measure gains.
6) Subjects were given a retention test one, two, three, or four weeks after treatment.

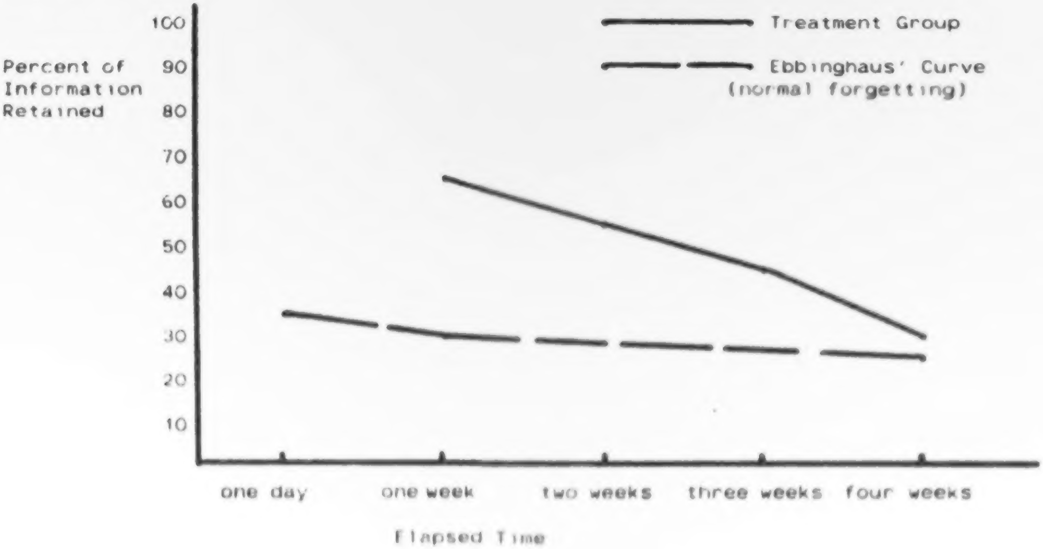
Results and Discussion

The resulting mean retention scores were plotted against a forgetting curve which resulted from the experimentation of Hermann Ebbinghaus in the 1880's. Ebbinghaus experimented with learning of nonsense words and the retention of those words. He plotted both learning and forgetting curves. While some may question the reliability of Ebbinghaus' results, we have found that more recent research has included confounding variables which make it impossible to plot a simple forgetting curve. In addition, Ebbinghaus' curve has been found to be remarkably valid (Sawrey & Telford, 1973).

Sawrey and Telford (1973, p. 372) stated that "while most of them (researchers) have not found forgetting to happen as rapidly as Ebbinghaus did, the extent to which their curves retain the same general shape as that described by this pioneering experimenter is surprising." Ebbinghaus' curve shows a dramatic loss in retention immediately after learning after which retention decreases gradually.

It was found that there was a difference in retention using Superlearning compared to Ebbinghaus' curve. Figure 1 shows consistently higher retention rates for subjects in this study compared to a 'normal' forgetting curve. After one week, subjects in this study demonstrated 67% retention, while Ebbinghaus found a one week retention rate of 34%. The retention rates resulting from this study show a linear decline while Ebbinghaus' did not. No prediction can be made as to what retention rates would result if a test were given five or six weeks after treatment.

Figure 1. Comparison of Subjects' Retention Rates with the Ebbinghaus Curve.



The findings suggest that Superlearning methods result in good retention, especially in the period one or two weeks after treatment. A further study is in progress to compare the retention rates of a treatment to those of a control group.

* * *   * * *

References

Gritton, C.E. & Benitez-Bordon, R. (1976). Americanizing suggestopedia: A preliminary trial of a U.S. classroom. *Journal of Suggestive-Accelerative Learning and Teaching, 1*(2), 83-93.

Hunter, I. (1970). *Memory.* Middlesex, England: Penguin Books.

Ostrander, S. & Schroeder, L. & Ostrander, N. (1979). *Superlearning.* New York: Delacorte Press.

Prichard, A. & Taylor, J. (1976). Adapting the Lozanov method for remedial reading instruction. *Journal of Suggestive-Accelerative Learning and Teaching, 1*(2), 107-115.

Render, G.F., Hull, C.R. & Moon, C.E. (1984). The effects of guided relaxation and Baroque music on college students' test performance. *Journal of the Society for Accelerative Learning and Teaching, 9*(1), 33-35.

Sawrey, J.M. & Telford, C. (1973). *Educational Psychology.* Boston: Allyn & Bacon.

Schuster, D.H. & Mouzon, D. (1982). Music and Vocabulary Learning. *Journal of the Society for Accelerative Learning and Teaching, 7*(1), 82-108.

Vannan, D.A. (1979). Adapted suggestology and student achievement. *Journal of Research in Science Teaching, 16*(3), 263-267.

* * *   * * *   * * *

Appendix

List of Unfamiliar Words

1. siffilate	a. to whisper
2. mullock	b. rubbish
3. pilose	c. hairy
4. impostume	d. abcess
5. arsle	e. to move backward
6. pullulate	f. to bud
7. vesicant	g. an agent that induces blistering
8. cotty	h. entangled
9. nisse	i. a friendly Scandinavian elf
10. docent	j. a teacher
11. komatik	k. an Eskimo sledge
12. sapid	l. having flavor
13. epulation	m. feasting
14. layne	n. to conceal
15. rachis	o. the spine
16. mabyer	p. a young hen
17. bensh	q. to bless
18. oneiric	r. of or relating to dreams
19. warling	s. a person detested or disliked
20. jimp	t. slender and trim
21. saanen	u. a breed of Swiss dairy goat
22. tabet	v. sensation; feeling
23. lamper	w. to walk heavily
24. thalposis	x. a sensation of warmth
25. urceole	y. a vessel for water for washing the hands

*** *** *** ***

"Superlearning" et Retention

L'étude de la retention d'un vocabulaire de définitions apprises suggestopédiquement, a été étudiée sur tests donnés une, deux, trois, ou quatre semaines après l'apprentissage. Les sujets observés étaient des étudiants de pédagogie en debut d'université. Comparée a la courbe classique de l'oubli d'Ebbinghaus, la courbe obtenue pour la retention suggestopédique était meilleure et lineaire.

Superlearning und Behalten

Das Behalten von suggestopädisch gelernten Wortbestimmungen wurde untersucht, indem je nach 1, 2, 3 oder 4 Wochen nach dem Lernen Nachtests durchgeführt wurden. Im Vergleich zur klassischen Ebbinghausschen Kurve des Vergessens war die Kurve des Behaltens von suggestopädisch gelernten Vokabulars besser und linear.

Superaprendizaje y retención en la memoria

Se aprendieron definiciones de vocabulario por retención en la memoria con sugestopedia, estas fueron estudiadas por medio de una prueba posterior y también se hicieron después de 1, 2, 3, y 4 semanas del aprendizaje. Los sujetos fueron estudiantes universitarios pregraduados de la clase de aprendizaje. En comparación con la clásica curva del olvido de Ebbinghaus, la curva de retención en la memoria con sugestopedia del vocabulario aprendido fué mejor y lineal.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3)

Use of the SALT Method (Suggestive Accelerative Learning Techniques) to Teach a Short Course on Paper Characteristics

D. H. Schuster
Iowa State University

Abstract. This study evaluated the SALT method in teaching a short course about paper characteristics to industrial paper users. The two sections of the course were taught differently, one with SALT, the other conventionally. From pretest to posttest, the SALT-taught students learned 80% more than those taught conventionally.

* * *

Introduction

The purpose of this study was to evaluate the effectiveness of the SALT (Suggestive Accelerative Learning Techniques) method in teaching a short course on characteristics about papers: how paper can be made, what the types of paper are, their different characteristics, and what characteristics about paper affect its use in printing. The experimental short course was ten hours and intended for people in the paper using industry, such as manufacturers and distributors of

---

A note of appreciation goes to Dean Nims of the Paper Company in Des Moines, and to Kay Scott, graduate student in Industrial Relations for their help in making this study possible.

paper, paper sales people, and paper consumers, buyers, and printers.

The basic research design was to present the material in both a conventional teaching format and in the SALT format. Subjects were randomly assigned to the short course by the supervisors, and by the flip of a coin the researcher decided which section would be taught conventionally and which section with SALT. Subjects were all from Iowa State University in various departments such as purchasing, printing, or media design. The research design was a one way analysis of variance with the independent variable being treatment whether subjects took the conventional paper course or the experimental SALT paper course. The dependent variable was achievement gain as measured by a paper and pencil test in a counter-balanced fashion with alternate forms both as pretest and posttest at the end of the ten hour short course given over two days.

Background

SALT (Suggestive Accelerative Learning Techniques) is an American synthesis of an accelerative teaching method called suggestopedia by its discoverer George Lozanov in Sophia, Bulgaria (Lozanov, 1978). The essence of suggestopedia or SALT is to present the material in several rather different styles such as to engage the students' attention as continuously as possible, and to utilize several different presentation styles deliberately to engage as much of the students' brain as possible in the learning process. For example, the material to be learned may be introduced and gone over briefly with the students in a rather conventional, dull preview of the material to be learned. Then the material is gone over for the first time in a major way with the instructor dramatizing the material as much as possible while requesting students to stay alert and project themselves imaginatively into the material being presented while classical, dramatic music is played in the background. The second major presentation of the didactic material occurs when the material is reviewed briefly with the students in a relaxed state and with the instructor's request that the students review their previous imagery quietly while baroque calm relaxing music is played in the background. Approximately half of the class time is devoted to having the students discuss what has been presented and having them role play about characteristics of the paper. For instance, one student might take the part of a paper sales person, the second student might take the part of a paper buyer and they discuss paper characteristics. Finally, there is always an ungraded quiz that terminates the lesson session for the day. In this study, of course, the ungraded quiz was the criterion posttest.

The reported accelerative gains for suggestopedia and SALT are noteworthy. Lozanov (1978) as a result of many public school and laboratory experiments in Bulgaria states that suggestopedia provides gains of three to five times over teaching the same subjects taught conventionally.

Research in the United States shows a similar pattern. Schuster (1983) reported on six American studies evaluating foreign languages taught with or without suggestopedia or SALT in a controlled basis. These well-controlled studies showed that suggestopedia or SALT provided an acceleration of two or three times above normal for teaching suggestopedically in American classrooms. Similarly Schuster and Prichard (1980) evaluated the SALT teaching method in ten Iowa Public School classrooms. The classes ranged from the first grade to the tenth grade in high school, and subject matter ranged from spelling, health science, German, mathematics, vocational agriculture, to art. Seven out of the ten SALT teachers had their students learn significantly more than the control students. An eighth teacher had results marginally significant ($.05 < p < .10$). An eighth, due to chronic alcoholism, was not in the SALT classroom until February. Thus, his students were prettested in late February or early March and posttested with the rest of the students in May. Nevertheless, his students learned the same amount in the three months between pretest and posttesting as had his control students in eight months. Only the last teacher showed exactly the same amount of gain over the pretest-posttest interval as did her controls taught conventionally. The picture for SALT in the Iowa Public School classroom is thus very good.

This present study was an undertaking to evaluate the SALT method in an industrial application. The study was done in cooperation with the Paper Company in Des Moines, Iowa, a distributor of paper products in the central Iowa area.

Course Content

In consulting with paper distributors, paper buyers and paper users, we made up a sixty-two page booklet, double-spaced which covered the following items: making paper, paper properties and finishes, paper mathematics (basis weights, weights per thousand sheets, paper math and equivalent weights of paper and types of paper, (text, bond, cover, carbonless, gummed, offset, miscellaneous, and interchangeable types of paper).

Two alternate forms of the criterion test were prepared in short answer form. The student was requested to write short sentences or sentence fragments as the answer to the question. In some cases arithmetic was required. Sample items were:

1. List the advantages of the stoneground process of paper making.
2. The basic size for bond paper is ________
3. A carton of sixteen pound bond paper 72 x 22" in size weighs (requires mathematical calculation)

Pairs of items were made to test each of the major points covered in the course. Then items of each pair were randomly assigned to either form A or to form B on paper characteristics. Each form of the test had a total of 46 points. The pretests were administered in counterbalanced form; alternate students were given form A or form B. On the posttest students took the other form than the one they had as a pretest. Gains scores were computed as the basic criterion. Typically students had very little pretest knowledge; they gained an appreciable amount after the class whether taught conventionally or with SALT.

The material was tried out once with employees with the Paper Company in Des Moines as a pilot project to get the procedures down pat for teaching the course with SALT. Then, employees at Iowa State University were solicited to sign up on one of two dates to take our short course on paper characteristics. Each short course was taught with 5 hours one day and then five hours on the second day. Employees did not know when they signed up to take one of the two short courses whether the short course would be taught conventionally or with SALT. The experimenter decided with the flip of a coin which section would be taught with SALT and which conventionally. The experimenter taught both sections with some assistance from sales people at the Des Moines Paper Company. When using SALT the procedures in Schuster & Gritton (1986) were used.

The results of the data analysis are shown in Table 1. The fact that the sizes of the two groups were quite different was due to the fact that this was a pilot study, and people even though they had been assigned to take one of the classes, did not take the class, thus accounting for six people in the SALT group versus only three in the conventionally taught group. The results showed that there were no significant differences in the amount of material known at the start of the class about paper characteristics. However, there were significant differences both in the posttest scores at the end of the class and in the gain scores. Relatively, the SALT-taught group learned approximately 80% more than the group taught conventionally.

There were no differences at the end of class in the value of the class to the employees or in pleasantness of the class. Both of these ratings were on a Likert 1 to 5 scale with one being very low, three - moderate, and five - very good.

In summary, the SALT taught class learned approximately 80% more than the class taught conventionally in the same ten hours of class time, and both sections were taught by the same instructor. If anything this gain is felt to be conservative because of the possible carryover of the SALT teaching style by the same instructor to the conventionally taught class. Probably the actual differences would be larger if the classes had been taught by separate instructors. Thus this study shows that SALT is effective in an industrial area and needs to be more widely applied and evaluated.

* * *   * * *

Table I: Test data by treatment groups, SALT (n=6) vs. conventional (n=3)

Data & Group		*Mean*	*S.D.*	*t*
Pretest,	SALT	7.00	7.18	0.28
	Conv.	5.67	4.93	
Posttest,	SALT	27.50	5.36	2.52*
	Conv.	18.00	5.30	
Gain,	SALT	20.50	3.73	2.86*
	Conv.	12.33	4.73	
Value,	SALT	2.50	0.55	2.24
	Conv.	3.00	0.00	
Pleasantness,	SALT	3.67	1.03	0.50
	Conv.	3.33	0.58	

* $p < .05$

References

Lozanov, G. (1978). *Suggestology and Outlines of Suggestopedia.* N.Y.: Gordon & Breach.

Schuster, D.H. & Prichard, R.A. (1978). A two year evaluation of the SALT method in central Iowa Public Schools. *Journal of Suggestive-Accelerative Learning and Teaching, 3*(2), 108-122. ED-181-722.

Schuster, D.H. & Gritton, C.E. (1986). *Suggestive Accelerative Learning Techniques.* New York: Gordon & Breach.

*** *** ***

L'utilisation de la methode de SALT (Techniques suggestives accelerativés de l'apprentissage)

Cette etude a evalue la methode de SALT en enseignant un petit cours sur les caracteristiques du papier a des usagers de papier industriel. Les deux sections du cours ont ete enseignees differemment, une par SALT, l'autre de façon conventionelle. La comparaison des resultats de tests effectues avant et apres l'apprentissage, a montre que les etudiants ayant suivi la methode de SALT avaient appris 80% de plus que ceux ayant appris par la methode conventionelle.

Die Anwendung der SALT- Methode in einem Schnellkurs über Papiereigenschaften

Diese Studie wertete die SALT- Methode in einem Schnellkurs über Papiereigenschaften für industrielle Papierbenutzer aus. Die zwei Abschnitte des Kurses wurden unterschiedlich gehalten, der eine mit SALT, der andere konventionell. Vom Vortest zum Nachtest lernten die mit SALT gelehrten Studenten 80% mehr als die konventionell gelehrten.

El uso del método SALT para enseñar en un curso corto las caracteristicas del papel

Este estudio evaluo el método SALT durante la enseñanza de un curso corto acerca de las caracteristicas del papel para uso industrial. Las dos secciones del curso fueron señaladas diferentemente, una con SALT y otra convencionalmente. Desde antes del exámen y despues de él, SALT demostro que los estudiantes aprendieron en un 80% mas, que aquellos que se les enseñó convencionalmente.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3).

The Three-Fingers Technique: A Means of Accelerating Learning?

Harry E. Stanton
University of Tasmania

Abstract. The literature relating the application of hypnosis to education is briefly outlined. One specific hypnotic approach, the three-finger technique, is described and its use in the educational context as a means of improving retention of material read or heard in the classroom emphasized. A study indicating the success of the method in improving the examination performance of second year high school students is reported.

* * *

Introduction

Almost two decades ago, Woody and Herr (1966) expressed surprise at the reluctance of psychologists to use hypnotic techniques in elementary and secondary schools. The situation today is little different. However, despite the lack of published research into this area, perhaps some work of this nature is carried out "in secret to avoid controversy" (Krippner, 1978).

In the light of the considerable upsurge of interest in the use of hypnosis with children (Gardner, 1980), it is somewhat surprising that the application of the technique to the educational setting has not received more attention. This is particularly so in view of earlier findings which suggest a definite facilitative effect.

As early as 1934, Gray indicated that hypnosis showed considerable promise of improving spelling performance, while Uhr (1958), Ziegenfuss (1962), and Astor (1971), have all supported its value as an educational tool.

Krippner (1971), one of the more active workers in the field, has specified three areas in which hypnosis could be of considerable aid to education:

* the improvement of study skills,
* the modification of test-taking behaviour,
* the increase in academic motivation.

Investigations, mainly at the College and University level, have attempted to explore these areas with rather mixed results, no clear cut findings having emerged (Fowler, 1961; Krippner, 1963; Mutke, 1967; Swiercinsky and Coe, 1970; Willis, 1972).

However, a more positive view may be derived from a recent review of ten studies examining the effects of hypnosis on improving the reading ability, academic achievement, self-concept, academic behaviour, and number reversals in children with learning problems (Russell, 1984). An earlier study of my own focussing on test anxiety among elementary school students, (Stanton, 1977) has also produced encouraging results.

The Three-Fingers Technique

In his Mind Control Course, Silva (1983) makes use of a conditioned "trigger" to facilitate improved use of the mental faculties. Although he does not specifically label this technique as hypnotic, it is identical to many approaches used by hypnotherapists, so it might well be defined as such. Because of the difficulty in deciding what hypnosis actually is, an operational definition is often accepted so that any technique making use of relaxation, suggestion and imagery may be labelled as 'hypnosis' (Stanton, 1978). As the Silva approach encompasses all three of these elements, it does seem reasonable to regard it as a hypnotic technique. If you wish to use the three-finger technique, first go to your "level". This is Silva's term for the alpha state which he suggests may be reached by closing your eyes, looking upward at an angle of about 20 beneath the closed lids, and using the 3 to 1, 10 to 1 approach. This involves imagining, about six feet out in front of you, a mental screen akin to a movie screen. On this screen, as you exhale, you visualize the number 3. This is repeated three times. Then the number 2 is coupled with three exhalations of breath. The same procedure is followed for the number 1. The the number 10 is visualized on the screen, again linked with the letting go of the breath. This number is "seen" only once, followed by 9, 8, and the other numbers down to 1 when the process is deemed to be complete.

The actual relaxation method used to attain the alpha state is immaterial, but that outlined above is usually quite effective. Once is this state, you repeat "Whenever I join my fingers together like this (at this point the tips of the first and second finger of either hand are placed against the thumb), I will instantly reach the level of mind to accomplish whatever I desire". This procedure is repeated several times each day for the period of a week. At the end of this time, Silva believes the conditioning process to be complete and the signal ready for use.

In the educational context, its use is three fold:

for reading - you enter "level" and tell yourself "I am going to count from 1 to 3. At 3, I will open my eyes and read (specify what you are to read). Noises will not distract me. I will have superior concentration and understanding." Then count to 3. Once you have read the passage, re-enter "level" and tell yourself "What I have just read (mention the specific title and subject) I can recall at any time in the future with the use of the three-finger technique."

for lectures - follow the same procedure.

for test-taking - read the questions as you would normally do, but do it quickly. If you have a ready answer, write it down. If not, go on to the next question.

-Use the three-finger technique and repeat this procedure, staying a little longer on the unanswered questions. If an answer comes, write it down, otherwise skip on the the next question.

-Use the three-finger technique again, read an unanswered question and, if the answer still refuses to come, close your eyes, turn them slightly upward, visualize your teacher on your mental screen and ask him or her for the answer. Then clear your mind and recommence thinking about the question. The answer that comes to you is that of your teacher.

Although this technique may seem somewhat unusual, the basis on which we can evaluate its effectiveness is that of examination performance. If students' marks after using this approach are better than those they recorded before doing so, it would appear that it has merit. The following study was set up to test the null hypotheses that students using the three-finger technique would do no better in terms of examination performance than other students not using the technique.

nor would they improve on their own previous performance.

The Study

60 second year students, 34 boys and 26 girls, attending a typical middle-class high school were the subjects of the study. These students took eight school subjects in common and the marks which they recorded in these subjects at the Term 2 examination were averaged. Students were paired on the basis of these marks, one member of each pair being allocated at random to an experimental group and the other serving as a control.

The experimental group learned the three-finger technique at the beginning of Term 3. They were asked to use it to help them absorb written material and the information they were given in class. A week prior to the Term 3 examinations, they were taken through the technique again, particularly as it applied to test-taking. After completion of the Term 3 examinations, the average mark of the eight subjects taken in common by the 60 students was computed. This was compared with that derived from the Term 2 examinations. The result of this comparison is shown in Table I.

When the average Term 3 examination mark of the experimental group is compared with their Term 2 performance, it can be seen that a significant improvement has taken place (t=6.32, two-tailed, df=29, $p < .001$). No such improvement can be noted for the control group which showed no significant gain between the two examinations.

Table I Average mark, out of 100, for eight examinations taken on two occasions by two groups of second year high school students (N=60)

Group	*Time of Testing*	
	Term 2	Term 3
Experimental	63%	72%
Control	64%	63%

Discussion

From the results of this study it would seem reasonable to conclude that the three-finger technique is able to facilitate short-term improvement in second year high school students examination performance. Whether this is a valid measure of increased academic ability is debatable, but it is one of the very few objective indices which we have.

The technique is a very simple one which students have no trouble in learning. Initially, their curiosity is piqued; later their interest is maintained as they find it becoming easier for them to remember the material they read and hear about in the classroom. Success breeds success. As students use the technique with increasing confidence in its effectiveness, so they seem to cope more capably with their school work. This improvement is reflected in better examination performance which in turn fuels further confidence in the three-finger technique.

The technique is a form of self-hypnosis, making use of the trance state in which we all spend much of our time. Whenever we day dream we are in such a state, or, when driving, we reach some town without any memory of the last 10 or 20 miles. In fact, it is probably harder to stay out of a trance state than to enter one. Thus, by using the three-finger technique we are making use of a completely natural ability.

This technique is one which has wide applicability to everyday life. Silva (1983) suggests its use as a trigger for better mobilization of the mental faculties in virtually every situation where thinking is required. For example, he advises that when considering whether to say "yes" or "no" to a request, we should put our fingers together to increase the likelihood that our answer will be the correct one. Similarly, when faced with any decision, we should consider the alternatives with our fingers held together and the correct answer will be forthcoming.

Stated baldly in this way, it sounds faintly ridiculous. Yet, the three-finger technique is really only a simple conditioned trigger which we can use to focus our faculties. By doing the conditioning while in the relaxed state, our suggestions become more powerful. Thus, when we invoke the signal at a later date it is likely to be successful in achieving the result we desire. After all, that is what counts. Does the technique actually help us achieve what we want? The results of the study reported in this article suggest that it does, and that further testing of its effectiveness is in order.

*** ***

References

Astor, M. (1971). Learning through hypnosis. *Educational Forum, 35,* 447-455.

Fowler, W.L. (1961). Hypnosis and learning. *International Journal of Clinical and Experimental Hypnosis, 9,* 223-232.

Gardner, G.G. (1980). Hypnosis with children: Selected readings. *International Journal of Clinical and Experimental Hypnosis, 28,* 289-293.

Gray, W.H. (1934). The effect of hypnosis on learning to spell. *Journal of Educational Psychology, 25,* 471-473.

Krippner, S. (1963). Hypnosis and reading improvement among university students. *American Journal of Clinical Hypnosis, 5,* 187-193.

Krippner, S. (1970). The use of hypnosis and the improvement of academic achievement. *Journal of Special Education, 4,* 451-460.

Krippner, S. (1978). The influence of consciousness research: A conversation with Stanley Krippner on exceptional child education. *Exceptional Child, 44,* 418-426.

Mutke, P.H. (1967). Increased reading comprehension through hypnosis. *American Journal of Clinical Hypnosis, 9,* 262-266.

Russell, R.A. (1984). The efficacy of hypnosis in the treatment of learning problems in children. *International Journal of Psychosomatics, 31,* 23-32.

Silva, J. (1983). *The Silva Method of Mind Control for Business Managers.* Englewood Cliffs, New Jersey: Prentice-Hall.

Stanton, H.E. (1977). Test anxiety and hypnosis: A different approach to an important problem. *The Australian Journal of Education, 21,* 179-186.

Stanton, H.E. (1978). Suggestology or hypnosis – it's all in the label. *Journal of Suggestive-Accelerative Learning and Teaching, 3,* 248-252.

Swiercinsky, D. & Coe, W.C. (1970). Hypnosis, hypnotic responsiveness, and learning meaningful material. *International Journal of Clinical and Experimental Hypnosis, 18,* 217-222.

Uhr, L. (1958). Learning under hypnosis. What do we know? What should we know? *International Journal of Clinical and Experimental Hypnosis, 6,* 121-135.

Willis, D.C. (1972). The effect of self-hypnosis on reading rate and comprehension. *American Journal of Clinical Hypnosis, 14,* 249-255.

Woody, R.H. & Herr, E.L. (1966). Psychologists and hypnosis: Part II. Use in educational settings. *American Journal of Clinical Hypnosis, 8,* 254-256.

Ziegenfuss, W.B. (1962). Hypnosis: A tool of education. *Education, 82,* 505-507.

* * *   * * *   * * *

La technique des trois doigts: un moyen pour apprendre plus vite?

La littérature ayant trait à l'application de l'hypnose à l'enseignement est brievement tracée. Une approche hypnotique spécifique est mise en relief, la technique des trois doigts, decrite ainsi que son utilisation dans un context éducatif comme moyen d'améliorer la rétention de materiel lu ou entendu en classe. Une étude indiquant le succès de la méthode à augmenter les résultats aux examens des étudiants de deuxième annee de lycée est signalée.

Die Drei- Finger- Technik: ein Mittel des accelerating learning?

Die Literatur bezüglich der Anwendung der Hypnose zur Bildung ist kurz ausgeführt. Ein spezifisch hypotischer Ansatz, die Drei- Finger- Technik wird beschrieben und ihre Anwendung im Bereich der Bildung als Mittel zur

Verbesserung des Behaltens von gelesenem oder im Klassenzimmer gehörten Materials hervorgehoben Es wird über eine Studie berichtet, die den Erfolg der Methode in der Verbesserung der Prüfungsleistung von Hochschulstudenten des zweiten Jahres aufweist

La tecnica de los tres dedos Un Significado de Aprendizaje Acelerado?

La literatura relata la aplicacion de la hipnosis en la educacion en idea general y breve Un acercamiento especifico de hipnosis, es la tecnica de los tres dedos descrita y usada en el contexto de la educacion, como significado al mejoramiento de retencion en la memoria del material leido or escuchado en clase sea enfatizado Un estudio ha indicado la fortuna del metodo y el mejoramiento en la presentacion del examen en estudiantes de segundo año de la escuela superior

J. of the Society for Accelerative Learning and Teaching, 1986, 11(3)

Using Imagery to Teach Study Skills

David M. Wark

Abstract. Scientific psychology has had a long but ambivalent relationship with the concept of imagery. When the first psychological laboratories were established in Germany in the late 1800's, much research was carefully executed to find just how images in the mind controlled behavior. There were many successes. But the results were not uniformly positive. Psychologists at Wurtzburg demonstrated that some behavior seemed to "appear" without any perceptible mental image. American radical behaviorists, following the lead of J. B. Watson, subsequently rejected the very notion of mental entities as a fit subject for psychological concern. However, recent research with hallucinogenic drugs, radar screen observers, solo pilots, snow cat drivers, psychotherapists, hypnotists, artists, athletes and educators has led to a resurgence, and even active embrace, of the concept of image. This paper reports some use of imagery to teach study skills to college students.

* * *

Review of Research

Pictures and other graphic images in text do improve learning (Alesandrini, 1982). Adults who saw pictures when reading of a revolution learned more than those who read the unadorned text. The effect was greater for science material. Instruction about heart physiology was learned better when illustrated (Dwyer 1972). However, the difference only appeared on questions that asked for drawings as responses. One critical variable is the relevance of the illustration to the text. It is not sufficient to inject a sketch into a text in order to achieve positive effects. The picture must illustrate the relation between concepts. Operationalizing the notion of "relation between" is difficult. Yet Arnheim (1979) argues that not only should illustrations show relations, they should do so artistically, in order to be maximally effective.

Another image-related variable that enhances learning is the concreteness of a word, (ie. the probability that it will elicit a reportable mental image). The word "domicile" is less concrete then the word "house". Concreteness has been shown to facilitate learning, (Jorgenson and Kintsch, 1973), recall, (Johnson 1974) and comprehension (Tirre et al., 1979). The latter presented adults with equally comprehensible passages that varied on the concrete-abstract dimension. The more concrete passages were comprehended better, using a short answer test.

Since pictures and concrete words seem to enhance learning, it is not surprising that instructing students to make images while reading is facilitative. Adults have been shown to learn easy material better when instructed to use imagery (Anderson and Hidde, 1971; Rasco, 1975). In a series of three integrated studies Jamison and Schimpf (1980) showed that students instructed to create images connecting concrete nouns (glove-roof) did better then students not so instructed. In addition they showed that instructing students what connecting image to use, even if it was a commonly effective one, was not as facilitative as just instructing students to make their own image and allowing the imaging process to run by itself. However, the process is not automatic. Learners instructed to make images of new scientific material, that they did not know well, were not helped (Lutz and Rigney, 1977).

Why should the use of pictures and self-generated mental images make learning and memory easier? Haber (1981) gives several examples of the way organized material is recalled. One of his examples is very familiar. The seven random digits of a telephone number are not easily recalled without many repetitions or some sort of mnemonic. However, the numbers 124-8163 are easy to recall after one notes the doubling progression. In fact, it would be easy to remember 124-8163, 264-1282, 565-1210 and so on, aided by the easily stated rule that elements in the string are successively doubled and then collected into alternating groups of 3 and 4 digits. Once the rule is known, learning and recall seems easy, almost effortless.

The situation is partially analogous, says Haber (1981), with regard to visual material. Humans as observers do not see lines and curves and spaces in visual scenes. They see "faces", or "trees" or "mountains under white fleecy clouds". The situation is somewhat akin to the ability of a skilled reader who does not see letters, only words. The organization of lines and curves and spaces into chunked perceptions may occur automatically, once an observer has learned the general name of a series of particular visual events.

It is fascinating that information represented visually can be learned and retained much more efficiently than if it is verbal. Standing, Conezio and Haber (1970) report that subjects shown 2500 pictures of ordinary scenes exceeded 90% correct recall, far above recall for words, sentences or numbers. Erdelyi (1976) showed that recall and recognition scores improve over time when stimuli are pictures, but did not improve when subjects retained words. Moreover, when subjects used visual imagery, recall improved.

Haber (1981) takes the view that visual images are more efficient for learning and recall because they are organized automatically at the neural level. He extends Miller's (1956) notion of chunking for recall from the verbal to the visual modality. Haber states that visual chunking occurs automatically because the human visual system has evolved to perceive scenes, and it organizes all light stimulation coming to the eyes as if it has been reflected from a scene stretching away in front of the eyes' (1981, page 5).

We have seen that imaging enhances comprehension and learning. Pictures aid learning about social and natural science. The more concrete and imagible a word, the easier it is to learn, especially if the learner is in charge of generating the image. Finally, pictures greatly enhance recall. Given all those findings, how can adults be taught to use them and do a better job in study?

Using Imagery

Preparation to Use Imagery

Simply directing a student to form an image while reading or listening may not be effective. For students of a realistic or practical inclination, the notion of an internal image is foreign and unreal. To students who want to be right, being asked to make an internal response that can not be evaluated and may be incorrect is threatening. For these students especially, and probably for others as well, it is desirable to start with some satisfactory explanation of the imaging process as it applies to education. One such rationale is the auditory, visual and kinesthetic representation system of Bandler and Grinder (1976).

In the formulations of Bandler and Grinder, humans make internal representations or maps of their experienced world. Maps of past experience, or future hopes and fantasies, may be represented as visual, auditory, or kinesthetic images. Students differ in the way they study and remember the ideas they have learned. But most students, regardless how pragmatic or compulsive they are, find the idea of differences in memory to be fascinating. It is easy to offer an exercise that will help them find out which is their favorite, most lifelike way of recalling the world.

To help students find out about their personal representation system, ask three questions about the place where they usually study. Request, in preparation, that they sit back into their chairs, take three deep breaths, relax deeply, and if they wish, close their eyes. Then ask:

1) Can you SEE the place where you usually study? Can you SEE the color of the walls, the shape of the table, the illustrations on the page?

Wait a few moments while the images form. Then ask:

2) Can you FEEL the space where you study? Can you FEEL the chair against your back, the weight of a pen in your hand, the thickness of the page between your fingers?

Again wait a while, and then continue:

3) Can your HEAR the sounds around you? Can you HEAR the sounds outside your study area, the sounds of a pen writing on paper, of your own breathing?

After that first image exercise, ask each student which was the most vivid and lifelike image. Even the most reluctant will have some answer. Then repeat the exercise. Ask the students to pick a vacation spot or some time or place away form school when they were very safe and productive and happy. Repeat the three questions, using general prompts to recall the color or shape or size (visual) or loudness or rhythm or change (sound) or hardness or weight or temperature (kinesthetic). Again ask which of the images were most vivid, most lifelike.

After the exercise, engage the class in some discussion about the differences in their images, and the differences between the image of a study space and a vacation space. Usually, in both spaces the visual image is most lifelike, usually in the vacation spot the feeling images become stronger. I like to suggest that it would be interesting if students could form as strong kinesthetic images about the place where they study as they can about places where they are safe and in control. Most students lack the feel of what they are about, although they see their duty clearly enough.

These illustrative data in Table I were collected Spring, 1983 in a How To Study class, when 14 students were asked to rate their images on a scale of 1 = blank, to 10 = vivid and lifelike.

Notice that the Visual image is most lifelike, and that the feeling image is stronger when the student imagines

Table I: Mean Vividness and Lifelikeness of Study and Vacation Images

	Study Image	*Vacation Image*
Visual	9.8	9.0
Auditory	6.8	7.2
Kinesthetic	6.8	8.0

a safe and relaxed place. The value of the exercise is not that it generates valid data about what really happens inside a student, nor that it helps pinpoint the student's favorite or most preferred representational system, not that it illuminates any differences between study and non-study use of imagery. The value is that it allows students to begin talking to each other as if they really did have images, and allows the teacher to begin using images as a metaphor for ways to develop study skills.

How to Use Imagery to Teach Study Skills

One of the common study skills is a survey used as part of most study systems, Robinson (1946), Pauk (1984), Raygor and Wark (1980). Indeed, research seems to indicate (Wark, 1964) that the survey step is the most effective, and least questionable step in a good study. But students seem to need a training technique that makes a survey easy to use. One such method is to ask students to imagine a hawk as preparation for study.

In preparation for teaching the survey step, students are told to sit back, take three deep breaths, and relax. Then they listen to the following script:

THE HAWK

Sit back in your chair and place your hands in your lap. Look at your hands and notice the differences in the colors of your skin around your fingernails, and as you do that you can feel the weight of your body pressing in the back of the chair while you also listen to the sounds of your breathing and feel your heart beat.

You may want to close your eyes as you imagine yourself standing out in a wide flat open place, empty and flat as any place you can imagine. Now in the middle of the plane you can create the image of a rocky, rugged, craggy mountain, solid and massive, heavy and impressive, very weighty. Notice how the rocks show many horizontal layers, piled one on top of the other for numberless ages.

High, high, above the mountain in a blue blue sky is a small moving dot. You can see it, just barely. As you look closer you see more clearly the head and wings of a hawk, sailing high above the mountain, looking down at the trees, like green dots printed on the mountain, at the streams like thin blue and green and silver lines, at the lakes and meadows, the open spaces.

Let yourself fly with that hawk, closer and closer to one of those interesting mountain meadows, those open spaces filled with so many things. Let yourself skim on the wind back and forth from one end to the other of that meadow, in wide slow circles. You can see from one end to the other. You can see how the ground stands out, commanding and impor-

> tant. and you see the low background. Hawks, you know, have amazing vision. You can see broadly for miles. Or you can zoom down and see very small details. That is interesting, as you pass over the meadow you can look down and see things to eat, things that can nourish you and feed you. You fly back and around, enjoying the feeling of getting more information about the meadow as you wing swiftly over it."

The images of a HAWK is designed as a metaphor to help a student achieve some new behavior that would seem strange without specific help. The mountain on the plain is of course a book on a table. The meadow is a chapter or a page, the HAWK doing a circle is the reader doing a survey.

How do students respond to this exercise in applied image making? Students in a How to Study class listened to the HAWK, and then surveyed a chapter in a book they had never seen. Reactions of the 14 students were:

Positive comments

HAWK helped me relax
Helped me feel good about my survey
I can make my study more personalized
Helped me see details in a book

Negative comments

I didn't consciously use the HAWK

Using Imagery to Increase Rate

The HAWK image can be used for teaching more than survey. With the right instructions, the image is a good one for increasing reading speed. In an experimental setting, a new sample of 12 students in a How to Study class were read the HAWK before reading the two rate exercises from the McGraw-Hill reading test, Form A. They were given 1 minute to silently image the HAWK and do a survey before reading the easy passage. Their subjective reaction was that the HAWK image slowed down their rate. On the basis of that report, they were instructed to image the HAWK before doing a 1 minute survey of the second and more difficult passage. But they were to image the HAWK flying briskly over the meadow, moving fast, skimming the tree tops. The data in Table II suggest that the students can in fact make impressive gains using the HAWK image.

Table II: Effects of Relaxed and Brisk Imaging Instructions of Reading Scores

	Relaxed HAWK Easy passage	*Brisk HAWK Hard Passage*
Mean words per minute	276	272
Mean rate percentile	54	76
Mean raw Comprehension	6.25	7

There are some interesting aspects to the results. Note first that in spite of the 1 minute preskim following a relaxed HAWK, the mean rate is only slightly above the 50th percentile for the easy passage. It appears that the students were reporting correctly when they said the relaxed HAWK slowed them down.

Note also the different effect of imaging a brisk and rapidly moving HAWK. The mean rate was about the same, but since the passage was harder, the percentile was higher. Note finally that the number of fact items retained out of 10 is very similar for the two conditions.

Using Imagery to Increase Comprehension

The technique of image making, once it has been established and practiced, can be used to help students better understand their reading. As part of a teaching exercise, students are asked to read a paragraph, and then take notes on the text by drawing what they read. Students who have practiced imaging have little trouble with the assignment. The effects are very interesting.

There seems, roughly, to be three types of imaging that students do. One is a drawing that suggests a confused rejection of the whole text. The reader seems to be saying that not only do they not understand the passage, they do not even want to. A second and largest group of students tends to give a hieroglyph, showing individual ideas or words in realistic depiction. The final and probably most sophisticated type of drawing shows, abstractly, the relations between the ideas in the passage.

For example, an exercise passage describes political theorists as the integrators of social science data, who find the base for social policy decisions in the masses of information from the research of other, slightly derogated, specialists (Raygor and Wark, 1980, page 6). The resulting drawings showed the three levels of imagery.

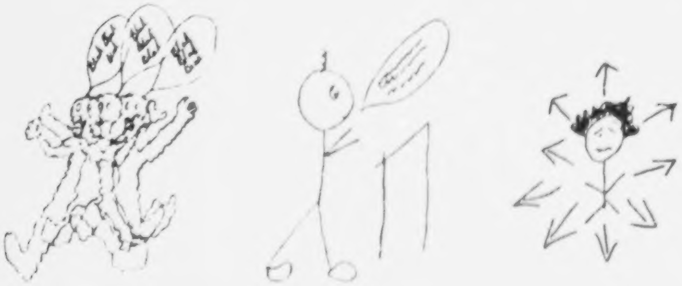
The first type of drawing may be of a stick figure professor standing in front of a lectern with an empty cartoon balloon over the head. There is nothing in the text about political science professors giving stuffy, boring lectures. Yet that seems to be the sense of the paragraph as reflected in that level of drawing. Clearly, the interpretation is based on something other than content.

The second type of image may be a fairly correct picture of a mountain (of data) separated into piles marked "important" and "waste." The image is exact, more or less correct, but rather pedestrian. The reader seems to understand the passage in an acceptable way.

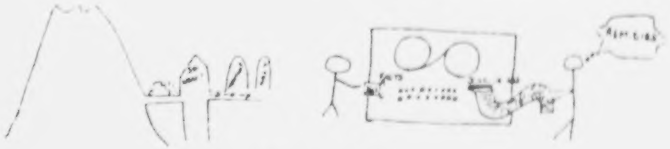
The final type of image shows the relation of the ideas in the passage. One example is a funnel-like image, abstractly showing the idea that political theorists filter and condense data. In terms of Haber's comments above, such an image represents excellent chunking, and should be recalled very easily.

When students are shown the different drawings from the same text they report new awareness. They see that there are several ways to comprehend a passage. They see that their way to read the paragraph may not be very effective for memory and retention. Type 2 images, which contain many explicit graphic details, are harder to recall than the more abstract but still meaningful image of a political science funnel. Subjectively, with only student reports as evidence, it appears that imaging is a way to help students understand the notion of comprehension and perhaps enhance the process.

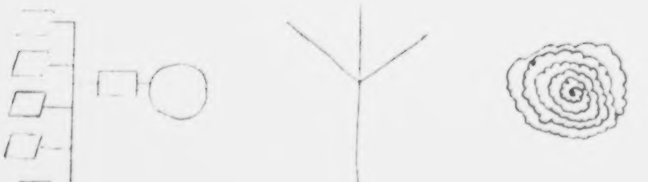
Figure 1: Images representing three types of comprehension of the same passages.



REJECTING OR MISINTERPRETING



HIEROGLYPHIC



ABSTRACTING

Using Imagery to Teach Writing

Images can be used in teaching students to write an effective theme. One way to help poor writers is to note that there are two critical steps in the writing process: generating ideas and placing the ideas in a reasonable organization. Typically, the step of generating is taught as a type of brainstorming. Students are told to think about the title or something to do with the paper and then let their imagination go to work. The instructions usually include support for accepting any ideas that come forth, and exhortations to be as "creative" as possible. For some students the process just does not seem to work. Certain images may help.

One critical aspect of brainstorming to generate ideas for a paper is that the student doing the brainstorming should have a sense of their own ability to do the job. Particularly for students in a How to Study class, an assignment to do a paper may produce a feeling of incompetence. Students immediately image themselves in an impossible situation, doomed to repeat all the errors of their past. However, with the right suggestions, students can produce much more helpful images, to begin the process of generating ideas.

One way for students to begin creating useful ideas is to start with an image of themselves being successful. In one exercise in the How to Study class, the assignment was to write a paper supporting business internships for undergraduates. After a discussion of what an internship involved, students were asked to generate 15 or 20 ideas for the paper. Some students had no trouble, others produced nothing of value. Then the class was asked to generate an image for themselves. They were to imagine themselves standing effectively at the head of a big conference table, lecturing a collection of expensively dressed but subservient company executives about the need for a well paid internship in their individual corporations. The students were to imagine themselves giving a strong, effective and persuasive speech on the value of an internship. The executives were, in imagery, to be supportive, appreciative and willing to contribute. With a few minutes spent in generating that image of success, the flow of student ideas was remarkable.

Other Uses of Imagery in a How to Study Class

There are at least two other ways that mental images can be used in a study skills class. One application is the teaching of techniques for memorizing. Methods for improving long term recall have been studied extensively. One good popular summary of the research (Lorayne and Lucas, 1974) suggests ways to input, organize and retrieve general material. Browning (1983) has shown extensive applications of memory techniques to solve study problems. Both authors stress the value of active imagery in the process. Students are shown how to develop concrete imagery of abstract concepts, how to organize and associate their images, and to retrieve them.

Another area of application is the treatment of test anxiety. An important review of the subject (Sarason, 1980) concludes that the best treatment for test anxiety is a combination of careful study, and cognitive restructuring. In practice, that means teaching students to use good study skills and to see themselves being more effective in a test situation, mentally rehearsing the steps of good test taking, visually and kinesthetically imaging themselves as successful. Research evidence (Mitchell, Hall and Piatkowski 1975; Tyron 1980) clearly supports the use of coping imagery.

Summary

There is sufficient evidence in the past decade to suggest that contemporary American psychologists and educators can take seriously the notion that student imagery skill is relevant to learning. Clearly, the image has become an acceptable scientific concept again. This paper cites research evidence of the way imagery has shown positive effects in learning and comprehension in laboratory situations. Further, it contains some examples of the use of images to enhance the learning of certain study skills in the classroom. But the situation for a teacher or counselor is not at all simple. While image oriented instruction seems to work in many cases, often it does not. Why? In fact, how is a teacher to know that any student is imaging at all? What are the valid and reliable tests of imagery? If we find out how to measure imagery ability, will we also find out how to increase and use it? There is a lively interchange between science and art that will lead to more and more applications of the image concept in both worlds.

*** ***

References

Anderson, R.C. & Hidde, L.J. (1971). Imagery and sentence learning. *Journal of Educational Psychology, 62,* 526-530.

Alesandrini, K.L. (1982). Imagery-eliciting strategies and meaningful learning. *Journal of Mental Imagery, 6,* 125-140.

Arnheim, R. (1979). Visual thinking in education. In A. Sheikh & J. Shaffer (Eds.), *The Potential of Fantasy and Imagination.* New York: Brandon House, 215-225.

Bandler, J. & Grinder, R. (1976). *The Structure of Magic II.* Palo Alto: Science and Behavior Books, Inc.

Browning, W. (1983). *Memory Power for Exams.* Lincoln: Cliffs Notes.

Dwyer, F.M. (1972). The effect of overt responses in improving visually programmed science instruction. *Journal of Research in Science Teaching, 9,* 47-55.

Erdelyi, M.H. (1976). Coding modality by input in hypermnesia: Is a rose a rose? *Cognition, 4,* 311-319.

Haber, R.N. (1981). The power of visual perceiving. *Journal of Mental Imagery, 5,* 1-40.

Jamison, D.G. & Schimpf (1980). Self-generated images are more effective mnemonics. *Journal of Mental Imagery, 4,* 25-33.

Johnson, R.E. (1974). Learners' prediction of the recallability of prose. *Journal of Reading Behavior, 28,* 339-350.

Jorgenson, C.C. & Kintsch, W. (1973). The role of imagery in the evaluation of sentences. *Cognitive Psychology, 4,* 110-116.

Lorayne, H. & Lucas, J. (1974). *The Memory Book.* New York: Stein and Day.

Lutz, K.A. & Rigney, J.W. (1977). *The effects of student-generated elaboration during acquisition of concepts in science.* (Tech report No. 82). Los Angeles: University of Southern California, Behavioral Technology Lab, NTIS #ADA 0470088.

Miller, G.A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63,* 81-97.

Mitchell, K.R., Hall, R.F. & Piatkowski, O.W. (1975). A program for the treatment of failing college students. *Behavior Therapy, 6,* 324-336.

Pauk, W. (1984). *How to Study in College.* Boston: Houghton Mifflin.

Rasco, R.V., Tennyson, R.D. & Boutwell, R.C. (1975). Imagery instructions and drawing in learning prose. *Journal of Educational Psychology, 67,* 585-311.

Raygor, A. & Wark, D.M. (1980). *Systems for Study,* (2nd ed). New York: McGraw-Hill Co.

Robinson, F. (1946). *Effective Study.* New York: Harper & Brothers.

Sarason, I.B. (1980). *Test anxiety: Theory, Research and Applications.* Hillsdale: Lawrence Erlbaum Associates.

Standing, L., Conezio, J. & Haber, R. (1970). Perception and memory for pictures: Single trial learning of 2500 visual stimuli. *Psychonomic Science, 19,* 73-74.

Tirre, W.C., Manelis, L. & Leicht, K.L. (1979). The effects of imaginal and verbal strategies on prose comprehension by adults. *Journal of Reading Behavior, 11,* 99-106.

Tyron, G.S. (1980). The measurement and treatment of test anxiety. *Review of Educational Research, 2,* 343-372.

Wark, D.M. (1964). Sq3r, system or superstition? *College and Adult Reading III - IV, the Yearbooks of the North Central Reading Association.* Minneapolis: North Central Reading Association.

* * *   * * *   * * *

Comment utiliser les images mentales pour enseigner les techniques facilitant l'etude

La psychologie scientifique entretient despuis longtemps des relations ambivalentes à l'egard du concept des images mentales. Quand les premiers laboratoires de

psychologique furent etablis en Allemagne a la fin du dix-neuvième siecle, une bonne partie des recherches furent executées avec soin pour trouver exactement comment les images mentales contrôlaient la conduite. Il y eut de nombreux succès, mais les resultats ne furent pas uniformement positifs. Les psychologues de Wurtzburg demontrèrent que certaines conduites semblaient "apparaitre" sans aucune image mentale perceptible. Les behavioristes americains radicaux, a leur tête J.B. Watson, rejeterent par la suite la notion même d'antités mentales en tant que sujets convenant a l'interêt des psychologues. Cependant, les recherches récentes faites avec les drogues hallucinogènes, les observateurs d'ecrans de radar, les pilotes volant en solo, les artistes, les conducteurs de skidoos, les psychotherapeutes, les hypnotistes, les artistes, les athlètes, et les éducateurs, conduisent a une résurgence, et même a l'adoption active du concept de l'image. Ce memoire presente quelques exemples de l'utilisation des images mentales pour enseigner les techniques facilitant l'etude, a des étudiants universitaires.

Die Anwendung bildhafter Vorstellungen, um Lernfertigkeiten zu vermitteln

Die wissenschaftliche Psychologie hatte eine lange, doch ambivalente Beziehung zum Konzept der bildhaften Vorstellungen. Als im späten 19. Jahrhundert in Deutschland die ersten psychologischen Labore errichtet wurde viel sorgfältige Forschung betrieben, gerade um herauszufinden, wie Bilder im Geiste das Verhalten kontrollieren. Es gab viele Erfolge, wenn auch die Ergebnisse nicht einheitlich positiv waren. Psychologen in Würtzburg demonstrierten, daß anscheinend manches Verhalten ohne jede erkennbare mentale Vorstellung in "Erscheinung" tritt. Radikale amerikanische Behavioristen, der

Führung J.B. Watsons folgend, wiesen demnach die leistste Idee eines mentalen Wesens als ein taugliches Thema von psychologischem Belang zurück. Jedoch die neuerliche Forschung mit halluzinogenen Drogen, Radarschirm Beobachtern, Solopiloten, Scheemobilfahrern, Psychotherapeuten, Hypnotiseuren, Künstlern, Athleten und Erziehern führten zu einem Wiederaufleben, ja sogar aktiven Umarmung des Konzepts der bildhaften Vorstellung. Dieser Artikel berichtet einige Anwendungen der bildhaften Vorstellung, um Collegestudenten Lernfertigkeiten zu vermitteln.

Usando imagenes para enseñar las destrezas en el estudio

La psicologia cientifica ha tenido una larga relación ambivalente con el concepto de imagenes. Cuando los primeros laboratorios psicológicos estuvieron establecidos en Alemania a finales del siglo pasado, muchas investigaciones fueron cuidadosamente ejecutadas para encontrar justamente, cómo las imagenes en la mente controlan la conducta. Tuvieron muchos exitos. Pero el resultado no fué uniformemente positivo. Psicólogos de Wurtzburg demostraron que algunas conductas parecieron que no se presentaron imagenes perceptibles mentales. La conducta radical Americana, siguió dirigiendo a J.B.Watson, posteriormente se rechazó la nocion de las identidades mentales porque no se ajustaron al interés psicológico. Sin embargo las investigaciones recientes con drogas alucinógenas, observadores de pantallas del radar, pilotos y conductores de snow cat, psicoterapistas, hipnotistas, artistas, atletas y educadores han tenido primacia en resurgir, y siempre están unidas activamete en el concepto de imagen. Este reporte informa como usar algunas imagenes para enseñar las destrezas en el estudio para estudiantes universitarios.

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Volume 11, Number 4 Winter, 1986

Published by the Society for Accelerative Learning and Teaching, Inc.

ISSN 0273-2459

THE JOURNAL OF THE SOCIETY FOR ACCELERATIVE LEARNING AND TEACHING

Guidelines for Contributors

The Editor welcomes submission of manuscripts on an interdisciplinary nature relevant to all aspects of suggestive learning-teaching-therapy counseling within the theoretical and procedural confines of Suggestology and/or Suggestopedia. The JOURNAL FOR THE SOCIETY OF ACCELERATIVE LEARNING AND TEACHING will publish a wide variety of articles - including critical reviews, theoretical analyses, speculative papers, case studies, quasi-experimental studies, as well as reports of empirical research (basic or applied) of major significance. The basic focus is Suggestopedia theory , research and application.

MANUSCRIPTS should be typed on one side of standard (8 ½ x 11 non-corrasable) bond typewriter paper, clearly mimeographed or multilithed. *Do not use ditto.* The original and three copies (carbon or dry electrostatic copies) should be submitted. Authors should also keep a personal copy to check against proofs. *All material must be double-spaced*, with ample margins (1 ½ in. on each side and 1 ½ on top and bottom). Any paper should not be longer than 20 typewritten pages, excluding bibliography, footnotes, tables, figures, etc. In special cases, longer papers may be submitted for publication.

REFERENCES should follow APA style. Authors should follow the standardized bibliographic format for reference citation as shown in the American Psychological Association Manual (1974). In the body of the text, the published work of others should be referred to by name and publication date in parentheses as follows, "Prichard and Taylor (1976) reported..." In the bibliography at the end, the referred-to articles should be listed fully in alphabetical order by author(s), title and publication source information as follows, "Prichard, A. & Taylor, J. Adapting the Lozanov method for remedial instruction. *Journal of Suggestive-Accelerative Learning and Teaching*, 1976 (Sum), 1(2), 107-115." Footnotes should be used to refer to unpublished material not generally available to readers, for example in the text, "Schuster claimed that relaxation..." A list of all footnotes should be typed on a separate sheet and placed between the end of the text and before the bibliography. An example of an entry in this list of footnotes is, "Schuster, D.H. The effects of relaxation and suggestions on the learning of Spanish words. Unpublished report, Psychology Department, Iowa State University, 1972, 6pp."

TABLES AND FIGURES should be kept to an absolute minimum and should supplement rather than duplicate text material. Each table should be typed on a separate sheet and be placed after the reference section of the manuscript. Figures should be submitted in a form suitable for photographic reproduction. Use India ink on a good grade of drawing paper. Photographs (black and white only) submitted as figures should be 5 x 7 inch glossy prints, uncropped and marked lightly on the back with a pencil. Submit all figures, photographs and tables with each of the four sets of manuscript materials.

ABSTRACTS between 50 and 200 words of each manuscript should be typed on a separate sheet and placed at the beginning of the manuscript.

PROOFS in typescript form of each article, letter to the Editor, brief communication, or book review will be returned to the author upon final acceptance of a manuscript. These are to be reviewed carefully and returned to the Journal's publication address within 5 working days. Typescripts not returned within this time limit will be considered approved. Authors are cautioned to read all tabular material and quotes against their copy of the original manuscript. Authors will receive 5 copies of their work on publication.

All manuscripts should be delivered by first class mail to:

Editor

The Journal of the Society for Accelertive Learning and Teaching
Psychology Department, Iowa State University, Ames, Iowa 50010

JOURNAL OF THE SOCIETY FOR ACCELERATIVE
LEARNING AND TEACHING
Volume 11, Number 4 .... Winter 1986

CONTENTS

A Suggestopedic Math Project Using Nine
Learning Disabled Students
Ron Erskine 225

The Brain and Accelerative Learning, Part III:
How People Function and Suggestions for Educators
James D. Hand and Barbara L. Stein 233

The Effects of Fantasy Journeys on Self-Concept
Gary F. Render, Connie R. Hull, Rogene Peak
Charles E. Moon and Mary E. Carlson 251

Using Accelerative Learning Techniques in a Large
University Class for Teaching Pascal Computer Language
Donald H. Schuster 263

An Attempt to Transform International Education
Bruce Tickell Taylor 279

Author index, Volume 11, JSALT 305

Topic index, Volume 11, JSALT 306

Don Schuster PhD
Editor

Marj Whitney
Circulation

Kay Herr PhD
Associate Editor

Renate Nummela-Caine PhD
Associate Editor

EDITORIAL BOARD

W Jane Bancroft PhD
Scarborough College
Univ of Toronto
West Hill, Ont M1C 1A4

Owen Caskey, PhD
8201 Edgemere
El Paso TX 79925

R McCrae Cochrane PhD
Center for Cont Development
64 Mountain St
Sharon MA 02067

Priscilla Donovan PhD
3050 S Zenia St
Denver CO 80231

Kurt A Fuerst, Ph.D
Carleton University
Colonel By Dr
Ottawa, Ont K1S 5B6

Lyelle Palmer PhD
Winona State University
Winona MN 55987

Pedro R Portes PhD
School of Education
University of Louisville
Louisville KY

Gabriel Racle PhD
1554 Rolland Av
Ottawa Ont K1G 0J4

John Senatore EdD
Univ of Southern Colorado
Pueblo CO 81001

JoLene Somsky
3700 Orleans Av
Sioux City IA 51105

Win Wenger PhD
P O Box 332
Gaithersburg MD 20877

Wendy Whitacre Stern
5381 W Calle Conejo
Tucson AZ 85745

For subscription, send order to SALT Journal, Psychology Dept, Iowa State University, Ames IA 50011. Subscription rates $20.00 per year, individual subscription. Outside U.S. add $15.00 per year for air mail (Canada and Mexico, same as U.S.). Back issues $7.00 per copy, $12.00 per doubled copy. List of available back issues sent on request. Copyright 1986 by the Society for Accelerative Learning and Teaching, Psychology Dept., Iowa State University, Ames IA 50011.

Mailing Permit 190, Ames, Iowa 50010

Printed in the USA

J. of the Society for Accelerative Learning and Teaching, 1986, 11(4)

A Suggestopedic Math Project Using Nine Learning Disabled Students.

Ron Erskine

Abstract. This report describes a teaching experiment using some suggestive methodology (use of baroque music, relaxation, imagery, and positive suggestion) in teaching multiplication tables to nine learning disabled students, all of whom displayed resistance to learning these skills at age-appropriate levels prior to this teaching experimentation. The remarkable gains seen by all group members were accompanied by changes in self-image, transfer of more positive learning experience to other classes, and parental enthusiasm for the new method.

* * *

Introduction

Nine learning disabled students, ten to thirteen years old, none of whom knew their multiplication facts, and most of whom had relatively no concept of number, during a fourteen week period were encouraged to listen to a taped recording of the multiplication tables. At the beginning of the recording, students listened to a visualization-relaxation exercise with baroque music in the background. This exercise lasted about ten minutes, and immediately afterwards, the multiplication tables were recited by the teacher on tape. After several weeks listening to the 2x, 3x, and 4x tables, we went on to the 5x and 6x, and then to the 7x and 8x until all the tables were completed. After each session with the tape, the students would return to their desks and solve from the chalkboard, anywhere from sixty to eighty addition, subtraction, multiplication, and division problems.

Throughout the taped sessions and chalkboard exercises, baroque music was played softly in the background. Five of the students spent a great deal less time at the tape recorder than the others. These five learned their facts much more quickly than the rest; consequently, they worked on the chalkboard exercises while the other four listened to the tape. In order to speed up the learning of these four, an incomplete multiplication worksheet was given out. The students were asked to put down the answers as they were given on the tape. This appeared to have the desired effect.

Procedure

Before the project was begun, the students were told about the beneficial effects that baroque music and relaxation imagery had on the learning process. They were told that they could learn faster, easier, and much more enjoyably, if they just relaxed, co-operated, and believed in the teacher. They were also informed of the negative effects that worry, fear, anger, and anxiety had on the learning process. The students accepted the rationale of this "new" theory, and all were eager to begin the project.

Before the multiplication tables were given, the students were instructed to relax, get comfortable, and forget everything except what was on the tape. The Pachelbel Canon was then played softly, and a guided imagery exercise was presented on tape. The students were encouraged to imagine themselves lying on a lush, grassy hillside underneath a blue sky with the sun gently warming them. A little white cloud appears on the horizon, and slowly drifts towards them. Eventually it reaches them and hovers above. The students are so relaxed and warm that they feel themselves rising slowly upwards until they are in the middle of the cloud. They then *become* the cloud and float quietly above the beautiful meadows and streams, enjoying this new feeling of tranquility and absolute freedom. At the completion of this exercise, the students felt relaxed, comfortable, and receptive to the math information which was to follow.

The students then listened to the multiplication tables; each element in each table was repeated three times: first, in an ordinary voice; then in a whisper, and finally, in a loud authoritative voice. This was done slowly and distinctly, so as to give the students time for the information to settle, or "gel". During the recording, another tape recorder played baroque music, mostly several variations of the Pachelbel Canon, Albinoni's Adagio, and other relevant baroque pieces.

At the completion of the taped math exercise, the students moved quietly back to their desks and began to copy some 60 to 80 math problems from the chalkboard. A relative quiet continued throughout the math period until everyone had finished. Five of these students became so skilled that they finished long before the others. They were asked to read or occupy their time quietly until the others had finished.

Results

The results of the project were quite startling. When one remembers that these were learning disabled students with very poor self-image and having minimal math skills, and with a long history of failure, the gains might even be termed as extraordinary. Everyone made excellent gains, and self-concept improved dramatically. These students are now infinitely more confident, relaxed, and motivated than they were at the beginning of the year--and on top of this, their favorite subject is--math. The students were delighted with their progress, and their parents were ecstatic, so much so that, almost without exception, they requested that their children remain in the same class for another year. The improvement in the students' self-concept, the new confidence, and the high motivation carried over to all the other subjects.

Two months after the first test results were taken, the students made very interesting and efficient gains. Since the teacher didn't expect such gains, the program hadn't really begun as a controlled project, or experiment, but merely as another way to teach the multiplication tables; consequently, the only standardized test given was the Monroe-Sherman Five Minute Math Test. Naturally, many informal tests, exercises, and quizzes were given throughout the math periods, and a comparison was made between results from the previous year and, of course, early September. These results are shown in Table I.

At the time of writing, these students are continuing to progress and are completing, in less than an hour, up to 100 math problems at a grade six level and beyond. As well as this, they are able to do simple algebraic problems such as: collecting like terms, substituting, and basic fractions.

It must be admitted that, owing to some unique physiological problems, two of these students do not fully understand several of the concepts, but are merely manipulating figures; nevertheless, their progress is still commendable.

Table I. Individual grade level scores on the Monroe-Sherman Math Test.

	Oct. '85	*Feb. '86*	*Gain*	*Apr. '86*	*Total Gain*
David	4.3	6.0	1.7	8.3	4.0
Dan	3.8	6.6	2.8	7.6	3.8
Brad	3.0	4.8	1.8	5.0	2.0
Monte	3.0	4.1	1.1	5.0	2.0
Christa	3.0	5.3	2.3	5.5	2.5
Rhonda	2.7	4.0	1.3	4.5	1.8
Marie	2.2	4.1	1.9	4.7	2.5
Chris	2.0	4.0	2.0	5.5	3.5
Dana	2.7	4.3	1.6	5.8	3.1
Average	2.97	4.80	1.83	5.77	2.80

In conclusion, this project seems to confirm many claims regarding the beneficial effects of positive suggestion, relaxation-visualization exercises, and baroque music as aids to accelerated learning and teaching. Also, the repetitive, differing voice pitch and inflections, when giving certain information, is a much more interesting and apparently more efficient method of relaying information - especially the usually boring basic math facts. Since discovering the efficacy of Suggestopedia, this writer has found a new joy in the classroom and hopes to convert the legions of frustrated "slow learners" into happy, confident accelerated achievers.

* * *   * * *   * * *

Un projet mathematique, utilisant la suggestopedie, avec neuf eleves desavantages

Ce bulletin decrit un experiment pedagogique utilisant des methologies suggestives (musique du baroque, relaxation, imagerie, et suggestion positives) pour instruire des faits de multiplication à neuf éleves désavantagés, qui, avant cette experimentation, avaient tous manifeste de la résistance à apprendre ces faits à âge indique.

Ein suggestopädisches Mathematikprojekt mit neun lernbehinderten Schülern.

In diesem Bericht wird ein Lehrexperiment beschrieben, in dem verschiedene suggestive Methoden (Barockmusik, Entspannung, bildliche Darstellung und positive Suggestion) verwendet wurden, um neun lernbehinderrten Schülern Multiplikationstabellen beizubringen. Vor diesem Versuch wiesen alle diese Schüler Widerstand gegen das Erlernen dieser altersangebrachten Fertigkeiten auf. Die bemerkenswerten Leistungssteigerungen, die alle Mitglieder der Versuchsgruppe erfuhren, waren gepaart mit Änderungen im Selbstbild, dem Übertragen der positiven Lernerfahrung zu anderen Unterrichtsfächern und elterlichem Enthusiasmus für die neue Methode.

Un proyecto en matemáticas con sugestopedia, aplicado a nueve estudiantes inhabilitados en la materia.

Este reporte describe un experimento de enseñanza usando la metodologia sugestopédica (utilizando musica barroca, relajacion, imaginación y sugestión positiva) enseñando las tablas de multiplicar a nueve estudiantes inhabilitados; todos ellos demos-

traron resistencia en el aprendizaje de estas destrezas. en el nivel y la edad apropiados antes de este experimento en la enseñanza. Algo singular e interesante se vió en todos los miembros del grupo pues estuvieron acompañados por cambios de la imagen-propia los cuales pasaron a ser experiencias positivas en el aprendizaje en otras clases y hubo un aparente entusiasmo por el nuevo metodo.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(4).

The Brain and Accelerative Learning, Part III: How People Function and Suggestions for Educators

James D. Hand
University of Illinois
College of Medicine at Rockford

and

Barbara L. Stein
North Texas State University

Abstract. Differences in hemispheric specialization for certain tasks are to some degree correlated with handedness and sex. Left-handed people, especially males, appear to have a disproportionate number of learning disabilities related to verbal skills and immunologic health problems. The corpus callosum, the major neuronal connection between brain hemispheres, is larger in left-handed than right-handed persons; this may later lead researchers to an explanation for learning disabilities in the left-handed group. There are also some minor anatomic and functional differences between females and males. These differences along with major similarities are discussed. "Mind modules" is a concept developed by Fodor, Gazzaniga and Ornstein based at least in part on the prior work of MacLean (triune brain). This concept hypothesizes multiple conscious selves, only one of which has verbal capacities. Gazzaniga's new thoughts are reported. Educators have sought in recent years to apply brain research findings in schooling. Suggestions are offered both for students and

teachers, based upon the research and theories discussed in all three parts of this series.

* * *

Introduction

In the previous two parts of this series, perception, pattern recognition, the anatomy of the brain and various brain function research and theories were discussed. In this third article we discuss some of the very latest information regarding handedness, male-female similarities and differences, mind modules, and suggestions for educators based on all three articles.

Handedness

Because of the relatively few left-handed people in this country, they have often been intentionally excluded from hemispheric lateralization studies because it has long been recognized that left-handed people are different. A few researchers, such as Geschwind, have focused attention specifically on the left-handed and ambidextrous, to determine how their brains are organized. Kocel (1977) found that 65% of left-handed people tested displayed the left hemisphere as the dominant verbal hemisphere. This leaves 35% for whom verbal abilities are right hemispheric predominant or shared relatively equally between the two halves of the brain.

Geschwind, intrigued by the apparent link between left-handedness, certain immune diseases and learning disabilities, surveyed nearly 3,000 people in Scotland, and found that the rates of learning disabilities and immunological diseases were, indeed, higher for left-handed people than for the right-handed (Garmon, 1985). Geschwind and Galaburda (1985) believe that fetal exposure to high levels of the male hormone testosterone also accounts for the following:

- Left-handedness is found more often among males than females
- Developmental disorders related to reading and speech are more common in males
- Females are better at verbal talents while males test out better at spatial skills (thought to be right hemispheric dominant)
- Certain immunological diseases are more common among males

The theory regarding the connection between testosterone levels, disease and learning disabilities is most controversial, as indicated in the editorial immediately preceding the first part of the series by Geschwind and Galaburda (Joynt, 1985). As Joynt states,

> "It is a bold look at a new area of neurobiology. It is provocative. Members of the editorial board who reviewed this were not in total agreement but they were excited about the insights and implications for research." (p. 427)

Whether or not the theory is considered controversial, the Geschwind-Galaburda work is eminently thorough and detailed, citing over 650 sources of brain lateralization studies.

Witelson (1985) found that, in both men and women, left-handed and ambidextrous people have a corpus callosum eleven percent larger than right-handed persons. It is not yet known whether this is because of a larger number of neuron fibers, thicker fibers, or more sparsely distributed nerve cells. It is known that the brain of an eight month old fetus has two to three times the number of brain neurons than does an adult (McAuliffe, 1985). Nerve cells die off and nerve axons are eliminated as the developing brain "fine-tunes" its connections. This continues through early childhood as learning compounds rapidly. One scientist, Blakemore of Oxford University, estimates "that as many as ninety percent of the connections you see in the adult brain are nonfunctional" (McAuliffe, 1985), an interesting thought in light of the often stated guess by educated consultants that mankind uses less that ten percent of our brain capacity. Witelson believes that fewer nerve fibers are eliminated in left-handers' brains, accounting for the larger corpus callosum. This would account for the lesser hemispheric specialization for language and spatial tasks in the left-handed and, possibly, the increased frequency of certain learning disabilities in this group.

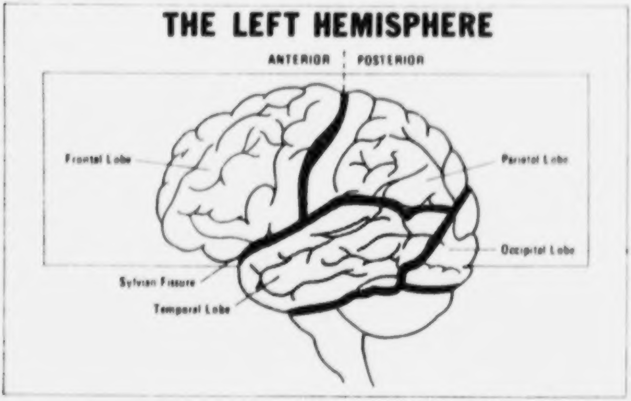
Male-Female Differences and Similarities

A number of researchers (mostly females) have undertaken the task of identifying anatomical and functional differences between brains of males and females (Kimura, 1985; McGlone, 1978; Levy, 1985). They have found that "women's brains are more diffusely organized than men's" and one major study found that the corpus callosum is slightly larger in women (Kimura, 1985). With this in mind, it is somewhat puzzling that right-handedness is more predominant in women (a sign of hemispheric specialization), and that right hemispheric damage results in no more speech disorder than in men, as one would expect if women depend on both hemispheres for speech.

As Kimura put it, "It took me 10 years to gather enough data on brain-damaged patients to make meaningful comparisons. But an important and surprising sex difference emerged" (Kimura, 1985, p. 54). While left hemisphere damage could cause speech disorders in both men and women, different sites within that hemisphere were involved in the two sexes. The disorder could occur with either anterior (frontal) or posterior damage in men. For women it is much less likely to occur from restricted posterior damage.

> No woman has lost her capacity for speech because of damage to the left parietal lobe, but several men have. This seemed to suggest that the brain area involved in women's speech is, if anything, more localized than in men, at least in the left hemisphere. (Kimura, 1985, p. 54)

It seems, then, that speech-related abilities are found in a more compact area of the female left hemisphere, and there are *no* sex-related differences in speech disorders detectable at this point from right hemisphere damage. In women, "speech favors anterior systems and avoids the parietal region," unlike men (Kimura, 1985, p. 56).


THE LEFT HEMISPHERE
ANTERIOR
POSTERIOR
Frontal Lobe
Parietal Lobe
Occipital Lobe
Sylvian Fissure
Temporal Lobe

There are other differences as well. For hand movements involved in motor skills, men tend to use both the anterior and posterior regions of the left hemisphere; women use mostly the front (anterior) portion. For defining vocabulary words, women use both hemispheres, front and back, while men use the left hemisphere, front and back. And for other verbal skills, such as naming words beginning with a certain letter or describing appropriate social behavior, both men and women use the front of the left hemisphere predominantly.

> Jerre Levy . . . suggested some time ago that the two halves of the body, including the brain hemispheres, might grow at different rates in boys and girls, even before birth. The left hemisphere may develop more quickly in girls, and the right hemisphere in boys, thus favoring verbal skills in girls and spatial skills in boys. . . . Marian Diamond (found) that the right cortex is thicker in males at most ages, while the left cortex is thicker in females at some ages . . . (Kimura, 1985, p. 57)

At various stages in a person's life, then, structures are undergoing more or less-rapid growth, and patterns of brain hemispheric functions will vary from time to time as a result. Spatial ability in women has been found to vary with natural levels of sex hormones on a monthly cycle. It seems to be best when estrogen levels are lowest. When female sex hormones are at their highest levels, women perform best on motor skill tests. Despite these findings, Kimura reminds us:

> . . . we can predict very little about an individual's mental capabilities based on his or her sex.

> . . . biological sex itself has turned out to be much more variable and dynamic than we ever imagined. And brain organization patterns are even more variable from person to person, and probably even within the same person at different times. Further, on most tests of cognitive ability there is enormous overlap of men and women. We strain to look for differences and, of course, tend to emphasize the few we find. (Kimura, 1985, p. 58)

Mind Modules

Jerry Fodor, Michael Gazzaniga and Robert Ornstein have separately developed a revised view of brain organization. Many researchers have gone on the assumption that thought processes proceed in serial order, with a unified, linear conscious experience. Gazzaniga argues, however,

> that the human brain has a modular organization; it is organized, that is, into relatively independent functioning units that work in parallel ways. Futhermore, these modules frequently operate apart from our conscious verbal selves.
>
> The realization that the mind has a modular organization suggests that some of our behavior should be accepted as capricous and that a particular act might have no origins in our conscious thought process. (Gazzaniga, 1985A, p. 30)

This concept follows closely from the work of MacLean on his theory of the triune brain. As discussed in Part II of this series, MacLean believes that nonverbal centers of the brain (the R-complex and limbic system) control social/ritualistic and emotional behaviors. If MacLean's thoughts about the compartmentalization of the brain into three major parts is within the realm of possibility, then the concept of "mind modules" is a natural extension of that earlier work.

Fodor, Gazzaniga and Ornstein theorize that the normal human brain has multiple modular processing systems; each capable of learning, actions, moods and responses; and that almost all work in nonverbal ways "such that their method of expression is solely through overt behavior or more covert emotional reactions." (Gazzaniga, 1985A, p. 32) These activities occur without verbal expression and "with abandon". Our verbal self must interpret and explain the actions, moods, and responses of the nonverbal mind modules. If there is no ready explanation, cognitive dissonance arises. Because people "cannot live in a state of conflict between a belief and something they have done, something has to give: what gives is usually the belief." (p. 33) The primary and associated verbal areas of the brain interpret our behaviors and emotional states, both for ourselves and those with whom we have contact, because of the brain's need to maintain a high degree of consistency in our behavior. Through this we are capable of assessing the nature of our "self". The more disparate the actions of the nonverbal modules, the more the verbal self must explain or rationalize those actions, the closer grows the verbal self to the nonverbal in their views of the world and belief systems.

As Lynn Nadel indicates, the main point to stress here is modularity, "and the resulting possibility that some modules are not accessible to conscious awareness; thus our perceptions, thoughts and actions are at least sometimes the result of factors we are not aware of. This . is quite consistant with the various themes explicated in SALT."

It seems a fascinating puzzle, unraveling very slowly, that each human may have multiple personalities with multiple needs, goals, and desires. At the very least, the views of MacLean, Fodor, Ornstein, Nadel and Gazzaniga should strike a note of truth in those of us who have acted "on impulse," done something even we could not readily explain later, and have had to modify our self-perceptions as a result.

Suggestions for Educators

The following suggestions are based upon what we know about the brain and how it functions. Some of the suggestions are common educational practices which can now be defended from an understanding of recent brain research. Some are espoused by those interested in accelerative teaching and learning. Other suggestions are new.

A great many students, perhaps the majority, mistakenly equate reading with studying. When reading silently, a relatively small portion of the neocortex is usually involved. By encouraging students to include other activities in their study, additional brain centers are activated.

1. Read the words aloud - activates Broca's area, Wernicke's area, left hemisphere sensory and motor cortex, and the angular gyrus (primary auditory area).
2. Read with emotion and inflection - activates right hemisphere areas for prosodic functions, right motor and sensory cortex, and limbic system.

3. Develop a pictorial image of the meaning of the words and sketch a visual summary - involves a major portion of the primary visual cortex, left and right motor and sensory cortices, central and peripheral nervous system from the brain stem through the arms, hands and fingers.
4. Summarize in your own words and write down key words to recall lengthy descriptions - allows some storage of words in the right hemisphere to tie in with the pictorial memory.
5. Color-code the sketches - discrimination within the right visual cortex.
6. Tie all of the above to laboratory or other experiential activities - activates left and right motor and sensory cortices, brain stem, central and peripheral nervous systems.
7. For review of previously learned material, use relaxation techniques, remembrance of joyful and easy learning, and the playing of baroque largo passages - lowers beta rhythms (13-30+ cycles per second) within the left hemisphere, the limbic system components controlling emotion and memory, and works to lower blood pressure, heart rate, and respiratory rate.
8. Test yourself after studying, emphasizing use of the key words and sketches in attempting to recall the details studied - reinforces neuronal connections established during initial learning, leading to hypertrophy and/or branching of neuron dendrites and making recall easier.

For the educator there are also several suggestions for planning instructional activities (Hand, 1982; Hand, 1984).

1. Being careful not to detract from the clarity of the presentation, use as many types of sensory and

theoretical inputs as possible. Multiple channels of input stimulate multiple brain sites and distribute neuronal connections across those sites. This improves recall capabilities because any of a number of stimuli can trigger the recall process.

2. Teach and test to the same memory system. If you emphasize the rote taxon system in your instruction on a particular topic, use rote memory testing also. Do not assume that the information has also entered the contextual locale memory system. If you want the student to be able to apply what was rote memorized, provide appropriate practice to provide a context for its use. This employs the locale system, and then it is also appropriate to test from the locale memory. As Nadel (1987) points out, "there are potential interference problems when you present information on many channels simultaneously. It is an empirical matter which forms of input combine effectively and which do not. I take it to be one of the tasks of SALT to determine some of these interactive effects."
3. When the information or process being learned has direct applicability to some future learning or use situation (such as a job task), the learning should take place within a context as similar as possible to the context in which it will be used, in order to enhance later recall.
4. When teaching for storage in locale memory, stress visual representations. Picture memory of humans is remarkably efficient.
5. At the conclusion of the learning session, have the students relax for a few moments while they rehearse what they have just seen and heard. Memory practice and verbal associations between what was said and what was seen increase the students' ability to recall and uncover previously

unremembered details. The "old saw" that a student should take a break and do something entirely different at the end of a study session was discovered to be a detriment to learning (Haber, 1970).

6. The more vivid and active the impression of what is being learned, the stronger the memory trace. The spike of electrical activity in the brain increases markedly with novel, surprizing or vivid stimuli.
7. Ask the student to verbalize during perceptual experiences. When information of a perceptual nature, regardless of the sensory systems employed, is encoded while the information simultaneously is being verbalized, the internal language system is active, and the information is encoded verbally and nonverbally. A bond forms which allows the language system some access to memories laid down by the non-verbal systems.
8. For individualized self-study materials, the setting in which they are used is at least equally important to learning as are the quality of content and the design used to present the information. Directions for use of the materials should include suggestions for appropriate settings in which study may be most effective. If the material can be used by pairs of students or by small groups for interactive study, directions should include suggestions for the most effective use of the materials in group discussion.
9. Clarity reduces unwarranted anxiety. Explicit directions, unambiguous learning objectives, sample test items, practice and review items, clearly drawn diagrams with appropriate labels, worksheets, and well-outlined and clearly stated textual materials tend to let the student know exactly what is expected by the instructor.

10 Examples used in instruction can affect the learner's attitude and mood. Effectiveness of examples is determined internally by the learner. Examples which are clearly pertinent to the subject, or to the life-goals of the student, provide a realistic backdrop for the information being learned. In many cases, the examples can draw upon esthetic appeal, empathetic situations, or common positive personal experiences of the learners, all of which can have a positive influence on the student's limbic system.

Conclusion

Over the past several years, research regarding brain functions during perception, learning and recall has increased dramatically. These studies and theories surrounding them were presented in three parts. The educational implications for improving instruction and learning are becoming more clear. Many of the tried-and-true teaching methods have been upheld by brain function research, while other methods become questionable. Educational research taking into account brain research findings will, undoubtably, soon follow.

* * *   * * *

References

Fodor, J. (1983). *The Modularity of Mind.* Cambridge, Mass.: MIT/Bradford Press.

Garmon, L. (Nov. 1985). Of hemispheres, handedness and more. *Psychology Today, 19,*(11), 40-48.

Gazzaniga, M.S. (Nov. 1985). The social brain. *Psychology Today, 19*(11), 29-38.

Gazzaniga, M.S. (1985). *The Social Brain: Discovering the Networks of the Mind.* New York: Basic Books, Inc.

Foundations. (1984) Cambrige, Mass Harvard University Press.

Geschwind, N. & Galaburda, A. (1985). Cerebral lateralization: Biological mechanisms, associations and pathways. *Archives of Neurology, 42*(5), 428-459, *42*(6), 521-552, *42*(7), 634-654.

Haber, R.N. (1970). How we remember what we see. *Scientific American, 222*(11), 104-112.

Hand, J.D. (1982). Brain functions during learning: Implications for text design. In Jonassen, D.H. (ed.), *The Technology of Text.* Englewood Cliffs, N.J.: Educational Technology Publications, 91-120.

Hand, J.D. (1984). Split-brain theory and recent results in brain research. In Bass, R.K. & Dills, C.R. (eds.), *Instructional Development: The State of the Art, II.* Dubuque, Iowa: Kendall/Hunt Publishing Co., 139-148.

Joynt, R.J. (1985). Editorial: Cerebral dominance. *Archives of Neurology, 42*(5), 427.

Kimura, D. & Harshman, R. (1984). Sex differences in brain organization for verbal and nonverbal functions. In deVries, G.J., et al. (eds.), *Sex Differences in the Brain: Progress in Brain Research,* vol. 61. Amsterdam: Elsevier.

Kimura, D. (Nov. 1985). Male brain, female brain: The hidden difference. *Psychology Today, 19*(11), 51-58.

Kocel, K.M. (1977). Cognitive abilities: Handedness, familial sinistrality, and sex. In Dimond, S. & Blizard, D. (eds.), *Evolution and Lateralization of the Brain.* Annals of the New York Academy of Sciences, *229,* 233-243.

Levy, J. (Jan. 1985). Jerre Levy: Interview. *Omni, 7*(4), 68-70, *97,* 99-102.

McAuliffe, K. (Oct 1985). Making of a mind. *Omni, 8*(1), 62-67, 74.

McGlone, J. (1978). Sex differences in functional brain asymmetry. *Cortex, 14,* 122-128.

Molfese, D.L. (Nov. 1985). When is a word a word: *Psychology Today, 19*(11), 10-12.

Nadel, L. Personal letter, July 31, 1987.

Ornstein, R. (1986). *Multimind.* Boston: Houghton Mifflin Co.

Trotter, R.J. (Nov. 1985). Memory: Lost it at the produce counter. *Psychology Today, 19*(11), 18-19.

Witelson, S.F. (1985). The brain connection: The corpus callosum is larger in left-handers. *Science, 229*(4714), 665-668.

* * *   * * *   * * *

Le Cerveau et l'apprentissage accéléré, Troisième Partie: Comment Les Gens Fonctionnet et Des Suggestions Pours Pédagogues

Des différences entre specialisation des hémisphères pour quelques devoirs sont correlés avec sexe ou si on est gaucher ou droitier. Les gauchers, surtout les mâles, ont apparemment plus de problèmes d'érudition avec des langages, et ont aussi des problèmes immunologiques. Le corps calleux, la principale connexion nerveuse entre les hémisphères du cerveau, est plus grand dans gauchers que dans droitiers. Ce fait indique peut-être une explication des problèmes d'érudition des gauchers. Il y a aussi des petites différences anatomiques et fonctionelles entres mâles et femelles. Ces petites différences et aussi des grandes ressemblances sont discutées. "Les modules d'intelligences" est un concept developé de Fodor, Gazzaniga et Ornstein basé, au moins en partie, sur les recherches antérieurs de MacLean (le cerveau triparti). Ce concept présent l'hypothèse qu'il y a plusieurs connaissances, duquelles une

seulement a des capacites verbales. Les nouvelles recherches de Gazzaniga sont representees. Les pedagogues ont récemment essayé d'appliquer les recherches cérébrales. On présent ici des suggestions pour étudiants et pédagogues, basees sur les recherches et les théories discutees dans les trois parties de cette série.

Das Gehirn und beschleunigendes Lernen. Teil III: Wie das menschliche Gehirn funktioniert und Vorschläge für Lehrer

Unterschiede in hemisphärischer Spezialisierung für verschiedene Aufgaben stehen, zu einem gewissen Grade, mit Rechts- oder Linkshändigkeit und Geschlecht in Beziehung. Linkshänder, insbesondere des männlichen Geschlechts, scheinen eine ungewöhnlich hohe Anzahl an Lernbehinderungen im Sprachbereich und immunologische Gesundheitsprobleme zu haben. Der Corpus Collosum, die hauptsächliche neuronische Verbindung zwischen den Gehirnhemisphären, ist größer in Linkshändern als in Rechtshändern. Diese Erkenntnis könnte in der Zukunft dazu beitragen, eine Erklärung für die Lernbehinderungen der Linkshänder zu finden. Außerdem gibt es einige geringe anatomische und funktionale Unterschiede zwischen den Geschlechtern. Diese Unterschiede zusammen mit den größeren Gleichheiten werden diskutiert. Verstandsmodule ein Begriff, der von Fodor, Gazzaniga und Ornstein entwickelt wurde, beruht zumindest zum Teil auf einer früheren Arbeit von MacLean (dreiteiliges Gehirn). Der neue Begriff beruht auf der Hypothese verschiedener Bewußtseins, von denen nur eines verbale Fähigkeiten hat. Gazzanigas neue Gedanken werden berichtet. Lehrer haben in den letzten Jahren versucht Resultate der Gehirnforschung in der Schule/Universität anzuwenden. Vorschläge für Schüler/Studenten sowie auch Lehrer, auf Grund der Forschungsarbeit und Theorien,

die in allen drei Teilen diskutiert werden, werden gemacht.

El cerebro en el aprendizaje. Parte III. Como funciona en la gente y Sugestiones para los educadores.

Existen diferencias en cada hemisferio y especializacion de cada uno de ellos para ciertas tareas y en algun grado correlacionados con la habilidad manual y el sexo. La gente zurda especialmente en los hombres en numero desproporcionado, se manifiesta en el aprendizaje relacionado con las destrezas verbales y problemas inmunologicos en la salud. El cuerpo calloso es la conexion entre los dos hemisferios cerebrales y es mas larga en las pesonas zurdas que en las diestras. Esto quizas mas tarde da primacia a las investigaciones para esclarecer las inhabilidades en el grupo de los zurdos. Hay tambien algunas diferencias anatomicas funcionales menores entre mujeres y hombres. Estas diferencias junto con otras parecidas están en discucion. "Mente modular" es un concepto desarrollado por Fodor, Gazzaniga y Ornstein basado por lo menos en la parte prioritaria del· trabajo de McLean (cerebror de tres). Este concepto hipotetisa en ciertos casos multiples conscientes y solo uno tiene la capacidad verbal. Los nuevos pensamientos de Gazzaniga fueron reportados. Los educadores que han buscado en años recientes para introducir en la enseñanza practica los descubrimientos encontrados en las investigaciones con respecto al cerebro. Sugerencias ofrecidas para ambos, estudiantes y maestros basadas en la investigacion y teorias discutidas en las tres partes de esta serie.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(4).

The Effects of Fantasy Journeys on Self-concept

Gary F. Render
Connie R. Hull
Rogene Peak
Charles E. Moon
University of Wyoming

and

Mary E. Carlson
Cheyenne Public Schools
Cheyenne, Wyoming

Abstract. This study attempted to influence pupils' self-concepts, as measured by the Piers-Harris Self-concept Scale, by the use of guided imagery fantasy journeys. Subjects were 53 fourth, fifth and sixth grade pupils from two different schools who were randomly assigned to one of 3 treatments: control, 3 guided fantasy journeys or 5 guided fantasy journeys. The guided fantasies emphasized successful goal images, relaxation and acceptance by others, relaxation and control of problems, and overall relaxation. The use of guided fantasy journeys in this study did not affect students' self-concepts on the Piers-Harris Scale. Suggestions for further research were given.

* * *

Introduction

Self-concept development has become a major goal of education. Educators have found that students' self-concepts are related to students' performance, attitudes and achievement. A plethora of books, articles, workshops and college courses address self-concept and offer a multitude of activities and experiences to facilitate its growth and development. With the great choice of suggestions available to educators, investigation of the effectiveness of approaches is needed. This study investigated the effects of a technique which, it is suggested, will enhance and nurture the development of positive self-concepts in students.

Fantasy journeys have been offered by educational theorists as one classroom approach to self-concept development.

> Guided fantasy or imagery is a strategy which can open the door to our imaginations and release the creative energies within us. It offers many answers -- examining our belief systems and our self-concepts, bring forth feelings, making us aware of our bodies, bringing clarity to many facts and concepts we try to understand, and opening a channel to our internal wisdom. Fantasies can surprise, inspire and puzzle us. Fantasies can be growth-facilitating, reinforcing and adventuresome. Through guided fantasy and imagery we have a new tool for exploration and for extending our own potential. (Canfield & Klimek, 1978, p. 1)

The use of fantasy journeys can allow the indirect expression of emotions, goals and beliefs in a non-threatening, non-judgmental atmosphere. Fantasy journeys can be used to explore student's attitudes, facilitate empathy and privately explore their innermost selves (Kruse & Render, 1982, 1986).

Canfield and Klimek (1978) suggested that fantasy journeys could improve students' self-concepts by teaching students to love themselves, to accept all of their parts and their personalities including their feelings, images, thoughts and sensations.

The effects of fantasy journeys in classrooms have been studied in several areas. The use of fantasy journeys has been shown to have a significant relationship with students' scores on a creativity measure. Boyle and Render (1982) found that junior high school students participating in guided fantasy journeys received significantly ($p < .05$) higher scores on the *Torrance Test of Creative Thinking*. Groff and Render (1983) found that the use of guided fantasy journeys was an effective method for the teaching of a social studies unit in fourth grade classes.

Galyean (1983) presented many suggestions for the use of guided imagery and fantasy in classrooms in all subject areas, and in cognitive, affective and transpersonal realms. She suggested that images form thoughts, and therefore persons can change themselves by changing their minds' images. By using imagery, teachers can facilitate students' forming new pictures of who they are and what they can be.

The theoretical basis for the use of fantasy journeys as a method for enhancing self-concept development is solid, and advocates suggest the relationship between the use of fantasy journeys and students' self-concepts will be strong. On that basis, Kruse and Render (1986) investigated the possible relationship between the use of fantasy journeys and students' self-concepts. They randomly assigned 51 third and fourth graders into either a treatment or a control group. The treatment group received a 13-minute fantasy journey prior to the administration of the *Piers-Harris Children's Self-Concept Scale* and the control group received no treatment prior to the administration of the self-concept scale. A two-tailed test was used as the literature did not empirically support a hypothesis. The results showed no significant difference between groups (p = .06). The result did, however, suggest that with a small sample of one grade level and a brief treatment using a conservative analysis an outcome approaching significance was obtained. The present study expanded the Kruse and Render study by including more grade levels (4, 5, and 6) and expanded treatments (3 fantasy journeys or 5 fantasy journeys) and using fantasy journeys specifically intended to address the self-concept and self-development. All are affective guided imageries offered by Galyean (1983).

Method

Subjects *(Ss)* were 53 third, fourth and fifth grade students. The classes were drawn from two different schools. The 53 *Ss* were randomly assigned to one of three groups. The groups were a) control--no treatment; b) treatment group--participated in three guided fantasy journeys over the course of one week (Monday, Wednesday and Friday); c) treatment group--participated in five guided fantasy journeys over the course of one week (Monday through Friday).

All groups responded to the *Piers-Harris Self-Concept Scale for Children* (1969) on Monday prior to treatments. All groups again responded to the Piers-Harris on Friday following treatments. The groups receiving fantasy journeys stayed in their regular classroom during the experience, and those not participating were taken by a teacher to another area to continue their school work.

The fantasy journeys used were all pre-recorded which allowed all treatment *Ss* to receive the same experiences. The fantasy journeys (FJ) were recorded using both female and male voices as follows: FJ1--female, FJ2--female, FJ3--male, FJ4--male, FJ5--female. In this way, all treatment *Ss* were exposed to both male and female voices.

The Piers-Harris was administered on Monday prior to the first treatment and Friday following the final treatment. The Piers-Harris was read aloud to *Ss* to assist poor readers.

Analysis

The data were analyzed in two ways to test for significant differences between the control and treatment groups and to test for differences between grade levels. Table I shows the pretest and posttest means for these groups.

Table I: Pre and posttest self-concept scores for all groups.

Group	*n*	*Pretest*	*Posttest*
A (Control)	18	61.34	67.28
B (3 FT)	14	58.93	61.86
C (5 FT)	21	57.92	61.24

Table II shows the pre and posttest self-concept scores for *Ss* by grade level.

Table II: Pre and posttest self-concept scores for all *Ss* by grade level.

Group	*n*	*Pretest*	*Posttest*
		Fourth	
A (Control)	3	60.33	56.66
B (3 FT)	5	58.20	55.20
C (5 FT)	7	56.85	57.28
	15	58.00	56.46
		Fifth	
A (Control)	9	61.66	70.55
B (3 FT)	8	57.00	64.87
C (5 FT)	5	59.20	67.00
	22	59.40	67.80
		Sixth	
A (Control)	6	61.33	67.66
B (3 FT)	1	78.00	71.00
C (5 FT)	9	56.44	61.11
	16	59.62	64.18

These scores were submitted to ANOVA and yielded the results as shown in Table III.

Table III: Analysis of variance.

Source	*SS*	*df*	*MS*	*F*	*p*
Covariate (pretest)	5138.366	1	5138.366	106.582	.001
Main Effects	979.410	4	244.852	5.079	.002
Group	59.281	2	29.640	.615	.545
Grade	854.585	2	427.293	8.863	.001
Interactions	82.305	4	20.576	.427	.788
Explained	6200.001	9	688.898	14.289	.001
Residual	2073.051	43	48.210		
Total	8278.132	52	159.099		

Table IV: Rates of change from pretest to posttest uncontrolled and controlled for pretest differences.

Grade	*n*	*Uncontrolled*	*Controlled*
4	15	-6.99	-5.92
5	22	4.23	4.11*
6	16	.73	-.09

* $p < .001$

Table III indicates that no significant differences were found between control and treatment groups. A significant difference ($p < .001$) was found among grade levels. Table IV shows the grade level rates of change uncontrolled and controlled for pretest differences as pretest scores showed the groups not to be homogeneous, as can be seen in Table I

Table IV shows that the fifth graders exhibited self-concept score changes significantly different from fourth and sixth graders.

Conclusions and Discussion

It was hypothesized that no significant differences would be found between groups on a pre and post measure of self-concept. The results did not support the rejection of the null hypothesis. The results of this study indicated that the use of guided fantasy journeys in classrooms did not affect students' self-concepts as measured by the Piers-Harris. The study by Kruse and Render (1986) which suggested the present study, although approaching significance, did not support the use of a fantasy journey to affect self-concept scores. The present study confirms those results.

Perhaps if the theorists are correct that the use of fantasy journeys can, in fact, enhance self-concept, other studies will still be needed to confirm this. Perhaps greater exposure to fantasy journeys, or fantasy journeys used over a long period of time (a semester or more) would yield results. The two studies of this question so far do not suggest optimism regarding this suggested relationship.

It is certainly of interest that all fifth graders significantly increased their self-concept scores regardless of which group they were assigned. There is no suggestion in these data to explain this phenomenon, and it does not coincide with previous results which indicate that fourth graders are more likely to show this gain.

At this point, it can be said that no relationship has been found between the use of fantasy journeys in the classroom and students' self-concepts.

* * * * * *

References

Boyle, C.L. & Render, G.F. (1982). The relationship between the use of fantasy journeys and creativity. *Journal of the Society for Accelerative Learning and Teaching, 7,* 269-281.

Canfield, J. & Klimek, P. (Feb. 1978). Education in the new age. *New Age,* pp. 27-39.

Galyean, B. (1983). *Mind sight: Learning through imaging.* Long Beach, CA: Center for Integrative Learning, 767 Gladys Avenue, Long Beach CA 90894.

Groff, E.B. & Render, G.F. (1983). The effectiveness of three classroom teaching methods (programmed instruction, simulation and guided fantasy). *Journal of the Society for Accelerative Learning and Teaching, 8*(1&2), 5-14.

Kruse, R.J. & Render, G.F. (Mar. 1982). *The relationship between student self-concept and the use of a fantasy journey.* A paper presented at the annual meeting of the American Educational Research Association, New York.

Kruse, R.J. & Render, G.F. (1986). The relationship between self-concept and the use of a fantasy journey. *Educational and Psychological Research, 6*(1), 17-25.

Piers, E.V. & Harris, D.B. (1969). *The Piers-Harris Children's Self-Concept Scale.* Nashville, TN: Counselor Recordings and Tests.

* * * * * * * * *

Les Effets de Voyages de Fantasie sur le concept de soi-même

Cette etude a essaye a influence la concept de soi-même dans des eleves, comme ete quantifie par l'echelle de Piers-Harris, en utilisant des voyages de fantasie avec imageries controllees. Ces fantasies controllees ont accentue des objectifs reussis, relaxation et acceptation par des autres, relaxation et influence sur des problemes, et simple relaxation. Malheureusement, l'utilisation de voyages controlles de fantasie n'avait pas influence les concepts de soi-même des etudiants sur l'echelle de Piers-Harris. On donne aussi des suggestions pour recharches futures.

Die Auswirkungen von Phantasiereisen auf das Selbstkonzept

In dieser Studie wurde versucht, das Selbstkonzept von Schülern, wie es durch den Piers-Harris Selbstkonzept Maßstab gemessen wird, durch gelenkte Bildphantasiereisen zu beeinflußen. Dreiundfünfzig Schüler der 4., 5. und 6. Klassen aus zwei verschiedenen Schulen, wurden wahllos zu drei verschiedenen Verfahren eingeteilt. Die erste Gruppe war die Kontrollgruppe. Die zweite Gruppe unternahm drei gelenkte Phantasiereisen, und die dritte Gruppe unternahm fünf gelenkte Phantasiereisen. Diese gelenkten Phantasiereisen betonten erfolgreiche Zielvorstellungen, Entspannung und die Anerkennung durch andere, Entspannung und die Kontrolle von Problemen and allgemeine Entspannung. Leider beeinflußten die gelenkten Phantasiereisen der Studie nicht das Selbstkonzept der Schüler wie es durch den Piers-Harris Maßstab gemessen wird. Vorschläge für weitere Untersuchungen wurden gemacht.

Los efectos del viaje a la fantasia en el concepto-propio

Este estudio, ensayo la influencia del concepto-propio de los pupilos, como medida se tomó la escala de Piers-Harris en el concepto-propio, con alumnos de quinto y sexto grado de dos escuelas diferentes quienes fueron asignados al azar para uno de los tres tratamientos: control, tres o cinco viajes a la fantasia. La guia a la fantasia enfatiza el exito de las imagenes metas, relajacion y aceptacion por otros, relajación y control de los problemas pero sobretodo relajación. Desafortunadamente el uso de las guias de viajes a la fantasia en este estudio, no afecto a los estudiantes, segun la escala de Piers-Harris en el concepto-propio y fueron dadas sugestiones más amplias de la investigación.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(4)

Using Accelerative Learning Techniques in a Large University Class for Teaching Pascal Computer Language*

Donald H. Schuster
Iowa State University

Abstract. The applicability of accelerative learning techniques to large classes was investigated by teaching beginning computer programming in one section of four with Suggestive-Accelerative Learning Techniques (SALT). Subjects were university students required to take a computer course, and were not computer science majors, typically business majors. The experimental section was taught Pascal computer programming with SALT in half the usual class time; the programming lab portion of the class was taught conventionally in all sections. The experiment was tried as a pilot run in Fall 1984, and data were collected on the common tests under controlled conditions in Spring 1985. There was a trivial significant difference favoring the experimental group, but the practical significance lies in the fact that the SALT-taught group learned the same amount of Pascal programming in half the class time taken by the other groups.

* * *

---

*Paper presented at the tenth annual Conference of the Society for Accelerative Learning and Teaching, Washington, D.C., May 10-12, 1985.

Purpose

The purpose of this particular study was to apply suggestive accelerative learning techniques to a large lecture class at the university level. That the SALT (Suggestive-Accelerative Learning Techniques) method works well with small classes of 10 to 30 students has been well documented many times and many places in recent literature. However, the discoverer and developer of this method, George Lozanov claims that the method works best with class size limited to 12. Thus the major thrust of this research was to adapt the method to a large lecture class with over 100 students. Seki (1983) has reported that the method has been adapted to a large computer engineering class successfully at Tokai University in Tokyo, Japan. Thus the author was encouraged to try to adapt the method for this particular class.

Background

The literature on teaching computer programming was reviewed for possible help in teaching in this experiment.

Bayman and Mayer (1984) looked at the human factors aspects of user's mental models for electronic calculators. They recommend in training that instruction should provide a model of the internal components and of the operating rules. Further the student should be encouraged to relate his or her experiences in instruction to the model and evaluate the usefulness of the model personally.

Schneiderman (1976) did some exploratory experiments with computer programmers. He reported that understanding a program was measured by (1) evaluation of a variable at a given point, (2) knowing or predicting the sequence of values of a variable, (3) knowing the number of times that a statement would be executed, (4) understanding the sequence in which statements would be executed, (5) being able to predict program output, (6) being able to describe the function of a program, (7) understanding the impact of making program changes, (8) being able to predict or understand how many times the program would take to get to some particular criterion, or (9) the ability of a student to memorize the particular concept.

Schneiderman (1977) had some recommendations to make for teaching programming. Specifically he felt that instructions should take a spiral approach, with teaching the sequence of operations to maintain student interests with meaningful examples. Subsequent instruction should be built on previous instruction and in keeping with the cognitive level of the students. Instruction should reinforce the acquisition of recent information and develop confidence in the student's ability to achieve increasingly harder tasks in programming. Schneiderman felt that there was no particular utility to detailed flow charting.

Soloway and others (1983) looked at the cognitive strategies of computer science students learning programming. He reported that students could understand and write programs correctly more often with a Read/Process strategy than with a Process/Read strategy. This implies that a While loop might be more beneficial than a Repeat Until loop.

Mayer (1982) investigated the contributions of cognitive science to the design of computer literacy curricula. He recommended the use of a glass box approach in teaching programing whereby the computer had a small number of parts that were interacting in an easily understood and "visible" or visualizable way. To back this up, he recommended using concrete models from the physical world. He also encouraged the students to put the concepts into their own words. That is, they were to elaborate in a filing application what is in a particular memory location at that particular moment. As part of this he recommended that students generate a one sentence summary of each paragraph read.

From this review of studies of teaching computer programming, the author decided to focus on presenting the big picture, the overall concepts in each chapter. Also, an effort would be made to present loop concepts as clearly as possible, since they are a frequent problem for students. Accordingly, 8" x 10" overhead transparencies (N=50) were prepared for class use.

The basic philosophy background and method for the philosophy of SALT come from suggestopedia with the text by Lozanov (1978). The method has been adapted and refined in the United States by Schuster and Gritton (1986) among many others. The SALT method utilizes aspects of suggestion similar to advertising and unusual styles of presenting material to accelerate classroom learning. The essence of this technique is using an unusual combination of physical relaxation exercises, mental concentration and suggestive principles to strengthen a person's ego and expand his or her memory capabilities with relaxing music while material to be learned is presented dynamically.

Procedure

The author as experimenter-instructor, collaborated with 2 other instructors in teaching 4 sections of Computer Science 175, Pascal Computer Programming, in the Department of Computer Science at Iowa State University. The author picked 1 of the 4 sections each semester in the academic year 1984–1985 to fit in with his other teaching load of 2 courses. This was assumed to be random assignment of the experimental SALT treatment to one of the 4 sections, so no knowledge of average academic ability per section was available a priori. One of the other instructors taught 2 section of Pascal, and the remaining instructor just 1 section. It was assumed that students had randomly assigned themselves to 1 of the 4 sections.

The SALT experimental approach was used only in the lecture half of the course; the laboratory programming part of the course was conducted conventionally. Two full 50 minute lectures were given initially in the semester, but after that the author lectured for 50 minutes on Mondays, for about 25 minutes on Wednesdays, and not at all on Fridays. The author maintained an additional office hour on Fridays during the cancelled class time, but only very few students ever took advantage of this. The SALT approach thus was to be used to teach the material for Pascal computer programming in half the normal class time, with the programming lab portion taught conventionally.

The SALT method has many independent elements which collectively add up to accelerated learning by students; see Schuster & Gritton (1986) for details. The SALT method was adapted to the lecture portion of the class as follows. A 2 week cycle was used for each lesson or subject in Pascal as in the other conventional sections, but the lecture times were 50, 25, 50, 25, minutes long for the SALT section. Several minutes of psychological relaxation and goal orientation occurred at the start of each class period. (Details are given further on.) Material for each lesson was presented twice in spite of the shortened time. Information was presented with the help of 8" x 10" overhead transparencies with classical music playing in the background. Students were requested to attend to this visual input. This same material was repeated with baroque music in the background, and students were requested to focus on the instructor's voice saying the concepts. A quiz or test concluded each 2 week lesson cycle.

Normally SALT procedures in a typical classroom go through three phases: preliminary preparations, presentation of didactic material, and practice of material. This had to be modified in a large lecture class as follows: since the class was held in a large auditorium, the usual physically relaxing exercises were dispensed with. Instead at the start of a semester, students were taught a mind-calming technique ("watch your breathing"), and asked to do this quietly for several minutes prior to the next phase. Three minutes of breathe watching is enough with sufficient practice to leave the student with a calmed, but alert mind, ready to absorb the material. The suggestive set-up phase was usually a simple sentence about as follows: "Now that you have your mind calm, you will find it very easy today to absorb today's material just like a sponge. Imagine yourself just soaking up this material and retaining it." Also, the students were introduced early in the semester to the "George Concept" which is a humanistic way in integrating a person's conscious and subconscious functioning. At the end of the mind calming phase or watching one's breathing, students were occasionally asked to talk to "George" or whatever they chose to name their subconscious mind. Then they were asked to visualize themselves learning the material more easily than usual, and to see and feel themselves in their imagination doing quite well on the quizzes and tests. They were to imagine this as realistically as possible and in as many different modalities as possible. A typical goal-oriented suggestive set-up along these lines was as follows: Imagine that you are taking a quiz over the material that you have just been studying. (Pause) Feel yourself sitting there, relaxed, and expect the answers to come flowing to your mind for each question. (Pause) See yourself staying relaxed, knowing the answers and doing better than you have in other courses. (Pause) Now imagine that the instructor has just given you the answer key and you check yourself to see how well you have done. (Pause) As you count up how many questions you have got right, feel that glow of pleasure within yourself that you have done so well. (Pause) Mentally pat yourself on the back and say "Thanks George" or whatever you care to call your subconscious mind."

In the presentation phase the author utilized prepared overhead transparent slides to present the material at a faster pace than was possible by having to write it out longhand on the blackboard. As the author started the presentation of the information in this fashion, students were asked to visualize this material, get the big picture and feel themselves soaking up the information. Occasionally, students would be asked to close their eyes and visualize some important point that the experimenter had put on the overhead slide and was calling attention to. Students were to close their eyes, visualize this and they were to see this in their minds. This request for visualizing of important details typically happened one or two times during a classroom lecture hour.

During the first presentation of material, the lecturer gave an explanation and occasionally took students through a short block of computer code step by step, calling it "thinking like a computer" or "hand execution of computer code." This first presentation of material was accompanied by classical-romantic music, such as Chopin's piano waltzes; ten different tapes as recommended by Lozanov (1978) were used in all.

The next class period the lecturer reviewed the same material quietly, and this time the students were instructed to listen to the instructor's voice, rather than focusing on the visualization and making images. It was all right to relax and let the previous images flow through the mind, but this second time emphasis was on how the words and concepts sounded, rather than on how they looked. For the second presentation, the lecturer utilized baroque music to relax the students. Again, musical pieces were selected from the ten recommended by Lozanov (1978). At all times the instructor lectured at or above the volume level of the music. Occasionally the music volume was adjusted to provide this contrast.

The instructor utilized seven program assignments. One of the other instructors also used seven program assignments, but one used only five, but his assignments were more integrated or more encompassing. An eighth programming assignment was made optional, as it covered the material in just the last chapter of eight before the final exam. Approximately 75% of the students took the optional quiz and 20% the optional program.

A 12 item quiz (or mid-term) was presented at the end of each of eight chapters, along with having the programming assignment for that same chapter being due simultaneously. The quizzes were all multiple choice format and covered theory, concepts and short programming problems in multiple choice format. The answers to the quiz were presented by the instructor as soon as possible at the conclusion of the quiz. About half the time the quiz answers were given in the same class period, and the other half of the time the quiz answers were given at the start of the next class period.

The other sections also gave intermediate quizzes. This instructor gave two mid-terms and five quizzes, with a sixth quiz being optional (test number eight).

Criteria

The criteria were the scores on the multiple choice parts of the examinations for the course. The three instructors got together collectively before each examination and made up a common set of multiple choice questions. While using a multiple choice format, most of the questions required more than mere recognition of the correct answer. Most questions required students to execute 3-10 lines of code like the computer to arrive at the correct answer. The common multiple-choice questions included some syntax questions (correct or incorrect) as well as questions about concepts, short and complicated programming examples. The instructors in the 4 class sections wrote some few individual test questions at the end of the large common block of questions. These individually written programming questions were not scored with the common part. There were 35 common multiple choice questions on the first mid-term and 30 on the second mid-term exam. The final exam consisted entirely of 45 multiple choice exam questions with no written programming problems given due to time pressure at the end of the semester. All three exams were given in exactly 60 minutes in all sections.

The study had one independent variable, SALT or conventional teaching. The class was scheduled in all 4 sections with 3 lectures weekly, each lecture lasting 50 minutes. However, in the experimental section, this was cut to 75 minutes (1 1/2 periods) weekly. The study was conducted over the fall semester 1984 and the spring semester 1985 at Iowa State University.

Results and Discussion

The fall semester was considered practice: letting the SALT instructor gain experience, developing fair and valid tests, and developing sound experimental procedures.

Data for the spring semester 1985 are presented in Table I. Data are presented for just the common multiple choice items for mid-terms one and two, and the final exam (all multiple choice). Note that in all cases, that the experimental section (number 4) had an average slightly above that for the other three conventionally taught sections. Using the Fisher exact probability test, this consistent superior ranking is significant ($p < .05$).

It's necessary to discuss whether the slight superiority of the experimental section could have been caused by a differential dropout among the 4 sections. The experimental section (#4) both started out with the lowest number of students (N=123) on mid-term (#1), and also had the fewest students (N=101) on the final exam, representing a drop rate of 17.9%; this was intermediate compared to the drop rates of the other sections. See Table I. A differential drop rate appears not to be responsible for the favorable results of the experimental section.

An attempt was made to collect student attitudinal information anonymously toward the Pascal course at the time of the final. This information was collected only in the experimental section, in spite of prearrangements to do so in all 4 sections. This same questionnaire solicited information about study and programming time spent out of class. The results are *not* presented here as there are no comparison data. In the author's opinion, the ratings, and information were average for a large class.

Table I: Class test averages and standard deviations in Computer Science 175, Spring, 1985.

Mid-term 1 (35 items)

Section	*N*	*Mean*	*SD*
1	142	24.01	4.35
2	151	24.14	4.49
3	141	24.13	4.59
4*	123	24.72	4.77

Mid-term 2 (30 items)

Section	*N*	*Mean*	*SD*
1	129	17.24	3.79
2	141	17.60	4.14
3	123	17.69	4.46
4*	106	19.09	4.02

Final (44 items)

Section	*N*	*Mean*	*SD*	*% Drop*
1	123	30.38	4.73	13.4
2	126	29.71	6.50	16.6
3	115	30.77	6.88	18.4
4*	101	31.14	5.42	17.9

Note: Using the Fisher exact probability test, the experimental section was sgnificantly the best overall on all 3 tests ($p < .05$).

* The experimental section was #4.

Students' volunteer comments on the anonymous questionnaires ranged from very poor to very good.

One sample derogatory comment was, "I can't believe I paid $300 for a psychology teacher to teach me com. science." (The author has been working with computers for 30 years, including having taught Fortran previously.) A positive comment was, "I also love the way of teaching. I feel I learned more with it." The author in other large classes gets the same range of comments anonymously, so teaching Pascal this way was no different than usual.

The last concern to discuss is the minor use of CAI. Another instructor than the author taught both sections 1 & 2, and used CAI in section 2. There were very small and trivial differences in test scores for these 2 sections, so it can be assumed its use in section #4 also had no influence.

In summary we can conclude that students taught with SALT learned slightly more than students taught conventionally. The experimentally taught students had learned about the same amount of material as the other students conventionally taught, but in only one half the class time. Thus it appears that SALT is a worthwhile technique to consider using in large lecture classes in computer programming.

* * *   * * *

References

Baymen, P. & Mayer, R.E. (1984). Instructional manipulation of user's mental models for electronic calculators. *International Journal of Man-Machine Studies, 20,* 189-199.

Lozanov, G.K. (1978). *Suggestology and Outlines of Suggestopedy.* New York City: Gordon and Breach.

Mayer, R.E. (1982). Contributions of cognitive science and related research in learning to the design of computer literacy curricula. *Computer Literacy,* 129-159.

Schuster, D.H. & Gritton, C.E. (1986). *Suggestive Accelerative Learning Techniques.* New York City: Gordon and Breach.

Seki, H. (1981). Experimental application of the SALT method to a large number of students. *Journal of the Society for Accelerative Learning and Teaching, 6*(4), 109-115.

Schneiderman, B. (1976). Exploratory experiments in programmer behavior. *International Journal of Computer and Information Sciences, 5*(2), 123-143.

Schneiderman, B. (1977). Teaching programming: A spiral approach to syntax and semantics. *Computers and Education, 1,* 193-197.

Soloway, E., et al. (Nov. 1983). Cognitive strategies and looping constructs. *Communications of the ACM, 26*(11), 853-860.

* * *   * * *   * * *

L'utilisation de techniques accelerees d'erudition dans une grande classe à l'universite pour enseigner Pascal, le langage de computer

Le possibilité d'utilisation des techniques accéléres d'erudition dans des grandes classes était recherchées par l'enseignement pour programmer des computers aux debutants dans une classe sur quatre, avec suggestopédie. Les sujets étaient étudiants à l'université, qui devaient prendre un cours de computer, et qui n'étaient pas primaire étudiants de computer. Ils étaient typique étudiants de commerce. Les étudiants dans la section experimentale ont appris Pascal par suggestopédie dans une moitié du temps. La pratique etait la meme pour

tous sections. L'experiment etait epreuve en automne 1984, et les donnees etaient rassemblees pendant le printemps 1985. Il y avait une differance triviale mais significative qui preferait la classe experimentale, mais la signifiance pratique se trouve dans le fait que cette classe a appris les faits de Pascal dans la moitie du temps que les autres.

Der Gebrauch von beschleunigenden Lerntechniken in einer großen Universitatsvorlesung zum Unterrichten der Pascal Computersprache

Die Anwendbarkeit von beschleunigenden Lerntechniken in großen Vorlesungen wurde untersucht, in dem eine von vier Gruppen eines Anfängerkurses im Computerprogrammieren mit der suggestiven- beschleunigenden Lerntechnik (SALT) unterrichtet wurde. Der Versuch wurde mit Studenten, die nicht als Hauptfach Computerwissenschaften, sondern hauptsächlich Wirtschaftswissenschaft studierten, durchgeführt. In der Versuchsgruppe wurde Pascalcomputerprogrammieren durch die SALT Methode in der Hälfte der üblichen Unterrichtszeit unterrichtet. Der Praktikumsteil der Veranstaltung wurde in allen Gruppen in der konventionellen Weise durchgeführt. Der Versuch wurde im Herbst 1984 als Pilotprojekt durchgeführt. Daten wurden dann durch die allgemeinen Test unter kontrollierten Bedingungen im Frühjahr 1985 gesammelt. Es gab geringe Unterschiede zu Gunsten der experimentellen Gruppe, aber die wirkliche Wichtigkeit besteht darin, daß die Gruppe, die mit SALT unterrichtet wurde, die gleiche Menge von Pascalprogrammieren in der Hälfte der Unterrichtszeit der anderen Gruppen erlernte.

Utilizando Tecnicas en Aprendizaje Rapido, en una clase grande en la Universidad para la enseñanza del Lenguaje Pascal en Computacion.

La aplicabilidad de las tecnicas para el aprendizaje acelerado en clases grandes fueron investigadas, enseñando desde el principio programacion de computadores una seccion de cuatro al azar con Técnicas Sugestivas para un Aprendizaje Rapido (Suggestive Accelerative Learning Techniques, SALT). Los sujetos fueron estudiantes universitarios quienes necesitaron tomar un curso de computacion, no fueron ciencias mayores en computación, tipicamente asuntos comerciales. En la seccion experimental, fue enseñado el Lenguaje Pascal, para programación de computadores con SALT, la mitad del tiempo de la clase usual, la parte de programación en laboratorio fué enseñada convencionalmente en todas las secciones. El experimento fué probado como experimento piloto en el otoño de 1984 y los datos fueron coleccionados mediante examenes comunes, bajo condiciones de control en la primavera de 1985. Significativamente hubo una diferencia trivial, favoreciendo al grupo experimental; pero el significado practico mintió con respecto a que SALT fué enseñado a un grupo que aprendió la misma cantidad de la programación con el Lenguaje Pascal en la mitad del tiempo de la clase tomadas por los otros estudiantes enseñados convencionalmente.

J. of the Society for Accelerative Learning and Teaching, 1986, 11(4)

An Attempt to Transform International Education.

Bruce Tickel Taylor

Abstract. Future education needs to be viewed from an international aspect to foster world-wide understanding and peace. The key to this paper is the word "ATTEMPT." A = Advancement of international education lacks proof of universal applicability. T=Transnational contacts to accomplish this aim, the pooling of resources of SALT and sister societies. T=Tests on an international scale to provide proof. E=Established schools encouraged to use the Method by means of these tests. M=Minorities given free introduction to the Method to help them and to provide further proof. P=People-to-people contact world-wide through other societies with parallel interests such as the Esperanto League of North America, the Planetary Citizens and the Institute of Noetic Sciences. T=Transformation of international education by these means.

* * *

Introduction

As a start I would like to quote from Dr. Edgar Mitchell (1985), who as one of the astronauts of the Apollo 14 Mission who walked on the Moon, found that the experience profoundly changed his attitudes towards the planet Earth from which he came:

> "No one I know of has gone to the Moon that has not been affected in some way that is simi-

lar. It is what I prefer to call instant global consciousness. (Later I shall return to the remainder of that comment.

I feel that to view the future of education, we must *consider it from an international*, global viewpoint. In coming to this Quatum Mind conference in West Palm Beach, most of us have viewed the Earth from high altitudes and many know different lands that comprise this planet that Dr. Mitchell and a few others have been privileged to view from the immensity of space.

We must, I feel, use what influence we have to forge a bond between Earth's peoples based on the realization that we are one. We are all fellow-passengers on Spaceship Earth.

In like manner, yet another international figure, this time from the world of international sports, Jean-Pierre Rives, until recently Captain of France's Rugby team said:

> "The best way to make people closer is by maintaining links and keeping alive the contacts."
> (Bills, 1986)

The whole thrust of this paper is in line with what Jean-Pierre Rives has said.

And I would add, is there anyone in a better position to do this, to sow the seeds of international understanding than teachers? Than teachers of this remarkable Lozanov Method? Than teachers whose society and its sister-societies encompass much of the Earth?

I feel that we are in a unique place at a unique time in the history of this planet. Also, if we want a future to contemplate, it behooves us to bend our very best efforts to forge the bond of friendship and understanding worldwide.

One of the groups that Dr. Mitchell is associated with, The Planetary Citizens, has put out a leaflet explaining their objectives, and I quote from it:

> "Only an informed and aware public can provide the context in which humanity-saving and earth-serving decisions can be successfully made." (More about this organization and related ones will be mentioned later in this paper.)

It was written long ago that, "Without vision the people perish." When Vanda Williamson sent out requests for SALT members to submit ideas for talks to this Quantum Mind Conference, she asked for visions of the future of education, OR, for practical ideas that could easily be emulated. I submitted both. These are contained in the title of my talk. Allow me to repeat it and explain.

"An Attempt to Transform International Education."

ATTEMPT is the key word; each letter is the first letter of the subjects covered. Let's look at that again:

A = Advancement
T = Transnational
T = Tests
E = Established
M = Minorities
P = People
T = Transformation

Let's clarify that:

1. Advancement--of international education.

2. Transnational--contacts to accomplish this aim of spreading from SALT to its sister-societies.
3. Tests--on an international scale to prove the efficacy of the Lozanov Method.
4. Established--schools introduced to the Method with short samples.
5. Minorities--given free use, providing further proof.
6. People--to people contact, worldwide.
7. Transformation--of international education by these means.

Advancement of International Education

I have noted, as I have roamed the Earth attempting to advance this remarkable Method, that there are certain factors which tend to block its universal use; they include the following:

a. Lack of proof of universal applicability.
b. Difficulty of introduction into well-established schools.
c. The need to reach minorities.
d. The need for worldwide extension of the Method.

Starting with (a) Lack of proof in universal applicability. This ties in with (b) Difficulty of introduction into well-established schools. We don't have enough documentation showing the universal applicability of the method to convince well-founded organizations that it is worth their while to adjust their schedules to the longer Lozanov format. (c) The need to reach minorities. This would not only alleviate their desperate need, but enable us to provide convincing proof of the efficacy of Dr. Lozanov's Method by providing success where traditional methods have largely failed. (d) The need for worldwide extension of the Method, to improve international education, that it may become a joy, instead of a drudgery as it so often is in schools beyond our current spheres of activity. And in the course of such extension to increase understanding among the citizens of this planet, enhancing international understanding and contributing to the peace of the world.

Quoting once more from the Planetary Citizens introductory pamphlet:

> Seeing things from a new place - the good of the whole - is not a new prescription, but it is no longer just a vague and ideal goal. Rather, it is essential for human continuance on earth. (Mitchell, 1985)

Transnational Contacts to Accomplish this Aim.

I suggest that we pool the resources of SALT and its members to foster, with the aid of our sister-societies in Australia, Brazil, Britain, Europe and beyond, an international test of this Method to gather the needed proof of its universal application.

I further suggest that SALT members *give* a tithe of their time to Minority groups to enable them to use the Method. Not only would it be a great boon to many of our less fortunate citizens, starting them on the road to joining the mainstream of society, but it would give us convincing proof of the efficacy of the method. In such an endeavor we may be able to approach other educational foundations to help advance this aim.

A further step that I would suggest is that SALT establish an international student and teacher exchange program of its own in concert with the afore-mentioned sister-societies, to further the exchange of knowledge and understanding of the Method and of the world's peoples. In this endeavor we may also be able to obtain assistance from other educational foundations.

Beyond these, I suggest that we extend our range of contact to yet other societies that have somewhat parallel interests. I submit the names and aims of three such organizations that I know and have communicated with. Doubtless you will know of many more which could be added to the directory that I suggested in my talk at the 1984 SALT Conference in Houston (Taylor, 1984). These organizations are as follows; later in the paper I will give further details about them and their aims.

The Esperanto League for North America, El Cerrito, CA
The Planetary Citizens, San Anselmo, CA
The Institute of Noetic Sciences, Sausalito, CA

To further extend our international reach and to extend our own language teaching, I would suggest that we learn and teach the international second language, Esperanto, which was invented nearly a century ago to decrease international tensions and to increase understanding among nations.

In concluding this section, I would add yet another comment derived from The Planetary Citizens, this time from their magazine, *Planet Earth,* (Spring, 1985) in a article by Robert Muller, Assistant Secretary-General at the United Nations. In it he says:

> "It is of paramount importance if we wish to establish right human relations, to give the children the right education; this is probably the most important problem we have to face on this planet."

> Since wars are born in the minds of men, it is in the minds of men where we have to erect the ramparts of peace.

So, let us extend our vision worldwide and through our influence on future generations promote the climate of international cooperation, through person to person contact enhanced by the method we owe to the genius of Dr. Lozanov.

It is one thing to dream, but we must not stop at dreaming or in seeing visions of what might be. We must put these into practice. But, how? Following this section are some practical suggestions based on my own and others' experiences of how at least some of these visions might become reality.

Tests on An International Scale to Prove Efficacy of the Lozanov Method

Last year, when speaking at the SEAL Conference at the University of London, I offered through ATTI, my Accelerative Tutoring and Transformations Institute, two free tapes, to members of SEAL (The Society for Effective Affective Learning, of Britain) and later during the ALSA Conference in Perth, Western Australia, to that organization also, also known as The Accelerative Learning Society of Australia. As I was unable to attend, an ALSA member, Mr. Willem Lake, kindly read my paper for me. Later, through the SALT Newsletter the offer was extended to this society's members as well.

The first tape, which was later sent to 35 schools in 11 different countries from Australasia, the Western Hemisphere and Europe, was a test of the Method, containing two short Lozanov lessons and with the accompanying directions sheet, two conventional lessons of similar length to be used as controls. The lessons all had pre- and posttests which quickly converted to graphs, thus providing a rapid way of checking existing and subsequent knowledge of the subject and comparison between conventional and Lozanov modes of instruction.

The need to provide controls with the same class using two different ways of teaching, derived from my difficulty in finding comparable classes to use as controls. Later, I found in the SALT Journal that Dr. Hideo Seki (1981) in Tokyo had similar problems and solution.

The idea of using a short form of the Method was derived from my experience in Windsor, California, mentioned in my Houston paper (1984) where our periods were too short for the entire method, so I used what I had time for with excellent results. The test tapes contained similarly short lessons.

The first Lozanov lesson contained relaxation exercises, guided fantasy, and provisions for Concerts I & II, these being provided by the local teachers using their own music tapes. I had suggested the ones that I knew from personal experience, those of LIND,* ACCELERATED LEARNING and SUPERLEARNING, though doubtless there are many tapes I am unaware of.

---

* LIND INSTITUTE, P.O. Box 14487, San Francisco, CA 94114, (415) 864-3396. ACCELERATED LEARNING SYSTEMS LTD, 10/14 Cambridge St., Aylesbury, Bucks, HP20 LRS England. (Also available through ATTI Bruce Tickell Taylor, 4234 Mt. Taylor Dr., Santa Rosa, CA 95404 USA. SUPERLEARNING, INC., 450 7th Ave, New York, NY 10123.

The second tape added an example of Activations to see if this added element would produce a measurable gain in test scores.

I suggest that SALT, SEAL, ALSA and similar societies band together to make truly representative series of tests to be tried out in as many countries and levels of education and subjects as possible. Then compile and publish the results. I feel that this would be useful for us all, convincing the as-yet-unenlightened that this method really does work everywhere. With the ATTI tapes, I have pointed the way, but with joint effort far more can be accomplished.

Established Schools Introduced to the Method with Short Examples.

It has been something of a problem to convince well established schools to try the method which appears insufficiently proven, to have to break their well-established routines to accommodate it. So lacking time for the whole method, half a loaf is better than none. Should SALT and kindred societies conduct a test, more precisely designed lesson lengths may be arrived at than the ATTI "Shot-gun" approach. Once the method has been proven by large scale tests, doubtless many schools will be more willing to adjust their schedules to fit the Lozanov limits.

Minorities Given Free Use, Providing Further Proof

I have found that certain minorities in our schools have a very high failure rate. When teaching in the schools of California, I used to delight in getting these children "turned on" to learning and see them become successful in their later lives. This sparked my suggestion to the teachers who received my ATTI tapes to copy them and the directions, and make them available to some minority teacher in their region, on condition that they did likewise to yet another in their group. This was an extension of the old "Each one, teach one" program that was designed to stamp out illiteracy.

In the pre-Lozanov days of my teaching I had had considerable success with so-called "impossible, unteachable" students, who with some concentrated encouragement were turned into successes. When I learned to "SALT for Success," the results were better and faster. There is nothing so convincing that there is something right with your methods when you score success where others have failed. Hence the suggestion to *give* minorities a tithe of our time. Both we and they will benefit, and to multiply the results, concentrate on teaching positively minded teachers in this category.

People-to-People Contact, Worldwide

Beyond the tests and assistance to minority groups, I suggest, as previously mentioned, that we arrange an international SALT Exchange program in concert with our sister-societies around the world. Then expand our contacts even further to include network contact with yet other groups who have parallel interests. Starting with our own fellow accelerative societies we might start exchanges arranged on a short time basis, taking advantage of using the different vacation times between northern and southern hemisphere schools. Later, when funds might be secured from educational foundations, more extensive exchanges might be arranged. However, the longest journey starts with a single step, and once one starts, it is remarkable the number of better ways of accomplishing the objectives which come to the surface. As I see it, such a program might operate in three stages as follows:

I Voluntary, vacation time exchange, costs paid by the participants for the experience. It might possibly have some tax advantages.

II A copy of the Elderhostel program, where the short time students would learn accelerative methods in their host countries, and teachers give courses in other lands on the same basis. This might be a point to attract some foundation funds.

III Full scale semester or year long exchanges possibly funded from foundations.

Whenever such a program should really get under way, our reach could be extended by joining with other internationally minded organizations with somewhat parallel interests in fostering world-wide people-to-people contacts.

The Esperanto League for North America is such an organization. Through it we can contact citizens most interested in promoting peace and understanding in 80 to 100 countries around the globe. Besides such far ranging contacts, the Esperanto language can provide considerable assistance to those of us who teach languages, English or foreign. In return our use of the Accelerative Method would greatly enhance the learning of this international second language which was designed for ease and speed of acquisition. Those who may be interested in learning more of this organization should contact its Central Office at: Post Office Box 1129, El Cerrito, CA 94530, telephone (415) 653-0998.

The language was invented nearly one hundred years ago by a Polish doctor of Jewish descent, Dr. Ludwig L. Zamenhof, and specifically designed for ease in learning. Containing a variety of words from European languages, 75% Romance and the remainder Germanic.

Unlike ethnic languages all its rules are consistent, making it an ideal first step in language study. One can learn grammar that makes sense and then proceed to other languages where consistency is not the by-word. It has been taught with this in mind as an introduction to English in both Hawaii and California (Goodman, 1978).

Dr. Zamenhof conceived the idea of an international second language in which no group would dominate the others by means of language, and spent many years perfecting it. In 1887 he brought out his first book, signing himself "Dr. Esperanto," meaning "the one who hopes." The name stuck, and the language has born that name ever since. The idea spread around the world, but was retarded by the two world wars, and appeared to have died out. But it has had a regeneration in recent years, which is fortunate as it is an excellent bridge language to worldwide understanding.

I first learned of it 40 years ago from my college philosophy teacher who had come from Hungary. I was intrigued with the idea of using it in place of Latin in elementary schools. But, I never could track down the source, until cleaning my garage last year I came across a magazine article which gave the El Cerrito address. I wrote and many months later I received a reply; my quest was ended and I started a correspondence course in this intriguing language.

This is where I started to think that this language designed to reduce racial tensions could benefit from another method of learning first developed in eastern Europe, namely our Lozanov Method. Let me describe the method used in the correspondence course, and judge for yourself if it could not be vastly improved by the application of SALT.

The course whose textbook is called *Junul-Kurso*, operates on the theory that one should not use one's own language at all. The vocabulary has pictures which are fine for nouns, but leaves one guessing and rummaging through the supplied dictionary for certain other parts of speech. The translations are only partial and are in French at that. The accompanying voice tape is very good for pronunciation, but like the translation is also incomplete. However, one is provided with a teacher, in my case several states away, with whom I correspond by tape via the U.S. Mail, which slows the learning process further. There are also lessons and grammar notes sent one at a time by the teacher and also a separate grammar text. However the basic language itself I find very easy and interesting, many words being easy to translate due to my smattering of about 8 languages. Also I find that since I have found another Esperanto text, called *The Esperanto Teacher* which carefully explains grammar terminology (Stuttard, 1973), I am also getting an appreciation of grammar, which I have to confess never made sense to me in any language. I was just lucky in living in some of the lands where my acquired language knowledge was the local language, so I rarely had to bother with rules.

Thinking to speed up the process by accelerative means, I suggested to my friend Diana Rose of Accelerated Learning Systems, Limited, of Aylesbury, England, that they add Esperanto to their excellent line of foreign language tapes.

Here, I ran into a reaction that I have since found true with a number of other language teachers. Diana, and these others, felt that Esperanto would distract from their other foreign languages.

Not so Diana, and others. Studies conducted in Maryland, Virginia and England, found just the opposite to be true. Students starting with Esperanto had a better understanding of the rules of grammar and learned the ethnic languages *faster* than those who started without the Esperanto introduction (Goodman, 1978).

Dr. John C. Birmingham (1984) of the Department of Foreign Languages at Virginia Commonwealth University, in Richmond, Virginia has this to say:

> "I see its (Esperanto's) value in learning about *English* grammar . . . I do see that a study of Esperanto can clearly pinpoint grammatical relationships in ways that the ethnic or natural languages cannot. For ethnic languages are plagued by exception upon exception and by precarious constructions built in thin air and totally lacking in logic . . . I am convinced that a study of Esperanto teaches most of the characteristics of the ethnic languages in general and that it does so in a succinct and relatively painless way. And the lack of exceptions is a real boon."

Further evidence in favor of the use of Esperanto in language learning comes from Dr. David K. Jordan (no date) of the University of California at San Diego:

> ". . . an interesting thing about these esperantists in particular is that after they learned Esperanto, they are awfully keen to learn other languages too."

I hope that this evidence will convince Diana and other doubters to change their minds about the value of Esperanto in *aiding* language learning. But in case it hasn't, is there anyone out there who really knows

Esperanto and would like to help me make a tape of it using Dr. Lozanov's speedy and effective language learning methods applied to Esperanto? ATTI, through Paul White of "Transformations" in Santa Rosa, California has complete audio taping equipment we can use. The afore-mentioned *Esperanto Teacher* would be a good source of information as it bears a closer resemblance to SALT methods with its complete translations and concurrent grammar than *Junul-Kurso*.

For those interested in Esperanto as is, the previously mentioned El Cerrito address in California is the source of all books mentioned and thousands more, as well as membership and magazines from worldwide Esperanto associations. There is also a three week unit college course available from San Francisco State University, June 30 - July 18, 1986. You can learn Esperanto there, then try your skill at the World Esperanto Convention in July 26 - August 2nd in Beijing, China. Details from:
Cathy Schulze 410 Darrell Rd. Hillsborough, CA 94010
Telephone: (415) 342-1796

I would like to point out that as an Esperantist I am a rank beginner, and if you desire to know more of this remarkable invented language, you should direct your questions to the Esperanto League in El Cerrito or else for those who live in Florida to: The Esperanto Society of Florida, 22991 Bay Shore Rd., Charlotte Harbor, FL 33950. Telephone (813) 627-1020.

I would like to say in passing that learning this language by conventional means has been far easier than any other that I have studied, and curiously the way in which words are built up by adding prefixes and suffixes to the root words, reminds me rather of the way Chinese and Japanese characters are built up out of simpler ones. In some booklet on Esperanto I saw the remark that by learning 500 root words plus the standard prefixes and suffixes one could rapidly acquire a 2,000 word vocabulary.

That set my mind to the comment in Colin Rose's *Accelerated Learning** that in the first lesson one could acquire a basic understanding of about 300 words in the first day's 45 minute Concert session. Combine that with the above comment on Esperanto and look what might be done!

Let's take a look at some of the basic concepts of Esperanto before moving on to the next item of interest. It has a 28 letter alphabet with only ONE sound each. To remember its vowel sounds just say: *A*re th*e*re thr*ee* or tw*o* for *A E I O U*. The letters Q W X & Y are not used. In their place are C G H J S & U. The first 5 have circumflex accents and the last an inverted crescent. There are 16 basic rules with NO exceptions! Nouns end in "o", adjectives in "a", all words are pronounced exactly as spelled. Here is an example of the language:

"Kiam kato promenas, la musoj festenas."
("When a cat goes out, the mice feast.")

As you may see from what I have said, Esperanto and its world ranging associations, could be very useful to the conjectured international exchange program for SALT, and I think we could offer something to further simplify and speed the learning of this excellent language with its international potential.

---

* See previous footnote.

Now let's look at the other two organizations which I believe we might work in cooperation with to extend our worldwide people-to-people contact to advance education for global peace.

The Planetary Citizens, whose address is P.O. Box 2722, San Anselmo, CA 94960, telephone (415) 485-1545. The best introduction to them lies in the second part of Dr. Mitchell's (1985) comment about his return from the Moon.

> "Each person comes back with a feeling that he is no longer only an American citizen, he is a Planetary Citizen. He doesn't like the way things are and he wants to improve it. It is the universal feeling among the astronauts."

Dr. Mitchell is on the Advisory Council of the Planetary Citizens which brings to public awareness our unprecedented state of affairs, so that we can respond together to the challenge. They seek to deepen the awareness of humanity as a single family on the interdependent planet. It was first founded in 1972 and has consultant status with the United Nations in New York. One of the members on its Board of Directors, known as the U.N. prophet of peace, Robert Muller (1985), whom I have already mentioned earlier in this paper, in a quotation from their magazine *Planet Earth*. Quoting further from it, he says:

> "I have a firm conviction that the human race will succeed some day in establishing right human relations and that such a day may not be quite as far off as one might think."

Quoting further from his article:

> "We cannot obtain right human relations if we do not give the children an honest view of the world. ... We must give them a global view of the planet's marvels."

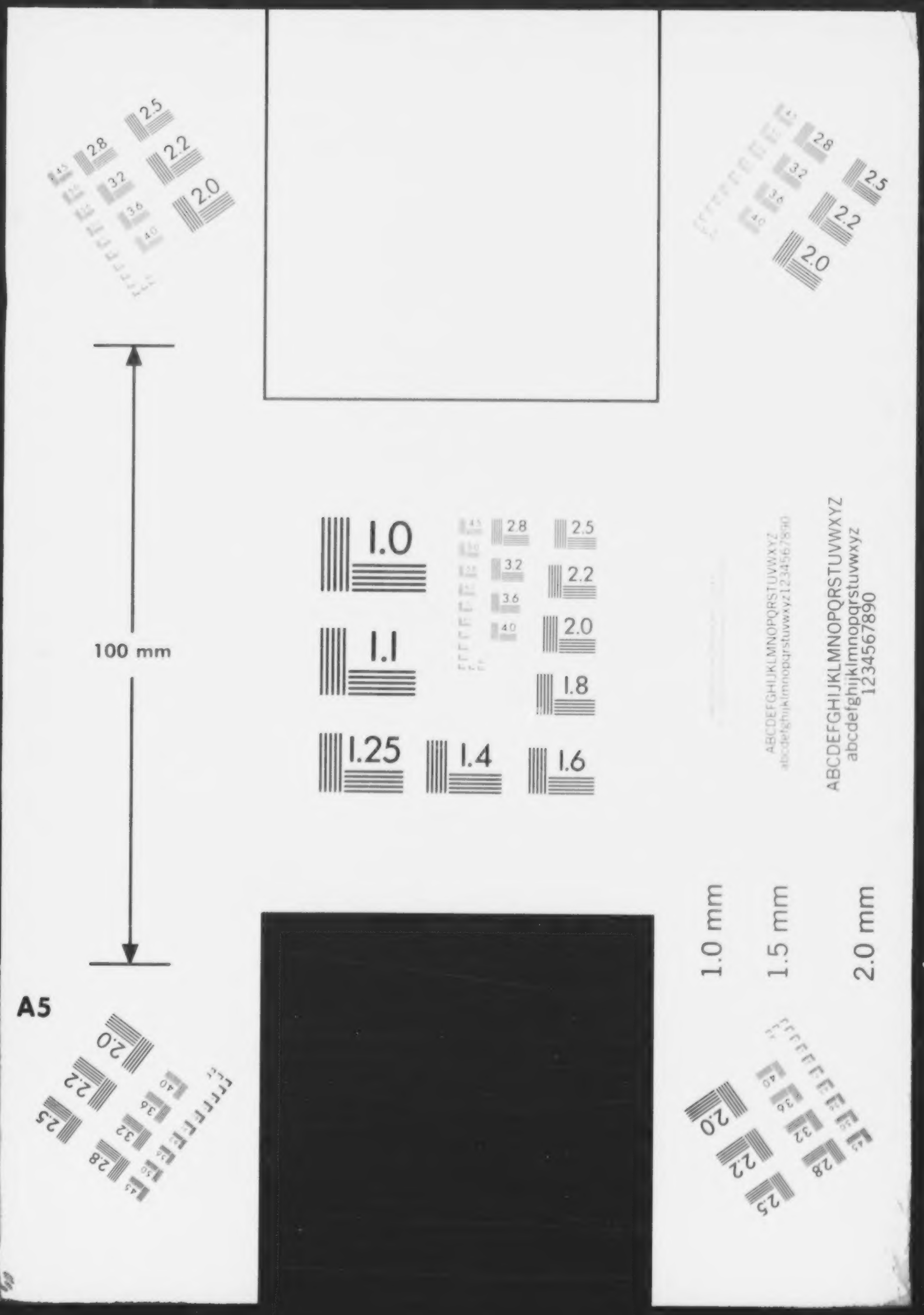
Further in his article he says:

> "Right human relations require that we tell him how he should relate to the skies, the sun, to time, to the human family, to his planet, to the social cosmos by which he is surrounded, to the infinite."

The ideas and ideals of this group tie in with what is necessary for the world's children to learn at this stage in Earth's history, and what is best for the planet and is an organization with far ranging contacts with whom we could work in cooperation to spread sound education for world peace. They have had people from twenty-seven different countries around the world endorse their organization.

This takes us to the third organization that I mentioned, which is related to the Planetary Citizens in that members of its administration have advisory status with the latter. This is the Institute of Noetic Sciences, founded by Dr. Mitchell as a direct result of his lunar mission. Dr. Willis Harman is its President. Both are on the Board of the Planetary Citizens. Quoting once more from Dr. Mitchell (1985):

> "It is becoming increasingly clear that the human mind and physical universe do not exist independently. Something as yet indefinable connects them. This connective link – between mind and matter, intelligence and intuition – is what Noetic Sciences is all about."


100 mm
A5
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
1.0 mm
1.5 mm
2.0 mm

Noetic Sciences are sciences of the mind, and I think in that connection alone, would be of interest to members of SALT. But their range extends even further. Among their activities they have arranged meetings with world leaders in government, industry, science, media, education. The institute has taken part in national and international conferences on planetary challenges and solutions, arranged citizen diplomat tours of the USSR, funded promising areas of research, provided an information clearing house for scientific and academic communities and countless other activities relating to the mind and to the extension of global understanding to establish a reliable basis for world peace.

A case in point is a letter which arrived as I was finishing this paper, from Dr. Willis Harman (no date) to members of the Institute of Noetic Sciences. It is entitled "How to think About Peace." (And feel empowered to do something about it.) I shall excerpt some aspects of it for your elucidation, but better yet I would suggest joining the institute for the range of interesting material they have available.

In his letter Dr. Harman lists nine fundamentally different ways in which peace has been approached in the past and the, are:

1. Removing the threat to peace
2. Deterrence.
3. Preventative Diplomacy
4. Disarmament and Arms Control
5. Removing the Fundamental Causes of War
6. Alternative Defense
7. Nonviolent Action
8. Nonviolent Conflict Resolution
9. Changing Attitudes: The Delegitimation of War

He is of the belief that a short-term goal of operational or practical peace can be achieved in a generation, and says if it can be it must be. He further says that whatever turns out to be the pathway to peace, it must contain some of the foregoing nine elements and involve changes in public attitudes as well as a *belief that peace is a feasible goal.*

In this regard he says and I quote verbatim:

> "The relevance of this deepening understanding of consciousness to the issue of peace is particularly relevant in two areas. One is in revealing the extent to which *beliefs underlie perceptions, and perceptions underlie conflict.* The other is in showing *how, and how much, deep-rooted attitudes, such as attitudes toward war, can be changed.*"

Continuing to paraphrase his thoughts, he says in effect that in the area of beliefs and perceptions, the most outstanding discovery is the extent to which our perceptions, motivations, values and behaviors are shaped by unconscious beliefs acquired from early experience and surroundings. This discovery has important implications for peace achievement. One does not need to change human nature, but the unconscious beliefs resulting from childhood conditioning. Through such a task is considerable, it is not impossible, quoting verbatim again he says:

> "We humans have an awesome ability to deceive ourselves. Once we have settled on one perception of "reality", all evidence to the contrary tends to become invisible, all hints that our picture might be wrong or even seriously incomplete are warded off."

Continuing further in his letter

> it appears that a vast number of persons would risk the destruction of civilization *rather than risk fundamentally changing their perceptions of the world.* The idea that collectively held beliefs create world conditions for non-peace is not widely appreciated. Consider the implications *if* we were to be persuaded that *the fundamental causes of non-peace on the planet are to be found mainly in the collective beliefs of the various societies--beliefs which are partly consciously held, but are in great measure unconscious."*

The ability to change unconscious beliefs through affirmation and inner imagery is a very important point which many of us in SALT are well aware of, though much of the population is as yet aware of. Of this Dr Harmon goes on to say

> 'Modern studies of consciousness and unconscious processes are unequivocal in their conclusion that what we affirm and program into our unconscious belief system we tend in subtle ways to bring about . collective belief in the achievement of global peace can indeed contribute toward the achievement of that goal, just as the collective disbelief is now thwarting it.

He summarizes by saying that

> holding a positive image, vividly imagining a state of peace to exist, contributes to that state coming about in ways that may seem quite mysterious if we have too limited a belief about the capabilities of the human mind. Because of the

> interconnectedness of all minds, affirming a positive vision of peace may be about the most sophisticated action any one of us can take."

Being well versed in the remarkable abilities of the mind, are we not as members of SALT in a unique position to further such a goal as Dr. Harman points out?

Transformation of International Education by These Means

Returning to my key word ATTEMPT, let's summarize the proposals in this "Attempt to transform international education."

In advancement of international education we need to overcome obstacles such as lack of proof, introduction to established schools, aiding minorities and worldwide extension of the method.

I suggested that transnational contacts would assist in accomplishment of this aim, starting from SALT and its sister-societies and extending to other groups with parallel interests.

International tests would provide proof of efficacy of the method, short samples would enable established schools to try it out, and free use by minorities would provide even more convincing proof. People-to-people contact worldwide through both accelerative and related societies. The three I mentioned have particular advantages, in language, interest in promoting world peace and developing research to attain these ends. Working with like-minded organizations such as these and others we can enable the world's children, the future generation, to have sustainable peace on the planet.

* * * * * *

References

Amikaro, S.A.T. (1981). *Junul-Kurso.* Paris: Union des Travailleurs Esperantistes des Pays de Langue Francaise.

Bills, P. (1986). *Jean-Pierre Rives, A Modern Corinthian.* London, England: Allen Unwin.

Birmingham, J.C. (1986). Learning about languages through Esperanto. *Modern Language Association of America.*

Goodman, T.H. (1978). Esperanto, threat or ally? *Foreign Language Annuals, 11*(2).

Harman, W. (no date). The President's Letter. *Institute of Noetic Sciences, Newsletter.* Sausalito, California: Institute of Noetic Sciences.

Jordan, D.K. (1980?). *Motivating the Gifted High School Language Student.* Hillsborough, CA: Esperanto Information Center.

Mitchell, E. (1985). *Planetary Citizens.* San Anselmo, CA: Planetary Citizens.

Muller, R. (1985). *The assent of goodwill: Planet Earth.* San Anselmo, CA: Planetary Citizens.

Seki, H. (1981). Experimental applications of the SALT method to a large number of students. *Journal of the Society for Accelerative Learning and Teaching, 6*(2), 109.

Stuttard, M. (1973). *The Esperanto Teacher,* 5th edition. London, England: Esperanto Publishing Co.

Taylor, B.T. (1984). Low budget introduction of elementary accelerative mathematics. *Journal of the Society for Accelerative Learning and Teaching, 9*(3), 183-194.

* * * * * * * * *

Appendix

Organizations referred to:

Accelerated Learning Systems Ltd., 10/14 Cambridge St., Aylesbury, Bucks, HP20 1RS England.
Accelerative Tutoring & Transformations Institute (ATTI) 4234 Mt. Taylor Dr., Santa Rosa, CA 95404 USA.
Esperanto Information Center, 410 Darrell Rd., Hillsborough, CA 94010 USA.
Esperanto League for North America, P.O Box 1129, El Cerrito, CA 94530.
Esperanto Society of Florida, 2291 Bay Shore Rd., Charlotte Harbor FL. 33950 USA.
Institute of Neotic Sciences, 475 Gate Five Rd., Suite 300, Sausalito, CA 94965 USA.
Learning in New Dimensions (LIND Institute), 549-A Castro St., P.O. Box 14487, San Francisco, CA 94114.
Planetary Citizens, P.O. 2722 San Anselmo, CA 94960.
Superlearning, Inc., 450-7th Ave, Suite 500, New York City, NY 10123 USA.
Universala Esperanto-Associo (The World Headquarters of Esperanto), Niewe Binnenweg 176 NL-3015 BJ ROTTERDAM, Nederlando.
Transformations (Recording Studio), 1122 Winding Ridge Rd., Santa Rosa, CA 95404 USA.

*** *** ***

Un essai a transformer l'education internationale

L'education de l'avenir doit être percue d'un aspect international pour encourager la comprehension et la paix mondiale. Le clef de cet article est le mot "ESSAI." (ATTEMPT) A = L'avancement de l'education internationale manque la preuve d'applicabilite mondiale.

T = Contactes transnationales pour realiser ce but. les resources communes de SALT et des societies fraternales. T = Des épreuves internationales pour donner des preuves. E = Des ecoles etablies doit être encourage a utiliser la Methode par ces épreuves. M = Des minorites doit être introduit a la Methode sans coute, pour les aider et pour decouvrir des preuves. P = Contacte mondiale avec des autres societes avec des interets parallel, tel que La Legue d'Esperanto de l'Amerique du Nord, les Citoyens Planétaire, et l'Institut des Sciences Noétique. T = Transformation de l'education internationale par ces moyens.

Ein Versuch (ATTEMPT) internationale Ausbildung zu verändern

Die Ausbildung in der Zukunft muß von einem internationalen Gesichtspunkt, der weltweites Verständnis und Frieden fördert, betrachtet werden. Das Schlüsselwort zu diesem Paper ist "Versuch" (ATTEMPT). A=(Advancement) Der Fortschritt der internationalen Ausbildung mangelt an Nachweis der universallen Anwendbarkeit. T=(Transnational) Übernationale Kontakte sollen dieses Ziel erreichen. Die Mittel von SALT und Schwesterorganizationen sollen vereinigt werden. T=Tests auf internationaller Ebene um Nachweis zu geben. E=(Established) Anerkannte Institute sollen ermutigt werden diese Methode zu verwenden, indem sie diese Tests anwenden. M=Minderheiten sollen kostenlos Einführungen in die Methode gegeben werden, um ihnen zu helfen und weiteren Nachweis zu geben. P=(people-to-people) Mensch-zu-Mensch Kontakte weltweit sollen hergestellt werden, durch andere Gesellschaften mit ähnlichen Vorstellungen , wie z.B. die Esperanto League of North America, die Plantary Citizens und das Institute für Noe-

tische Wissenschaften T=(Transformation) Veränderung der internationalen Ausbildung durch diese Wege

Intentando transformar la Educacion Internacional

La educacion futura necesita ser revisada desde un aspecto internacional, para dar alas a lo ancho del mundo con entendimiento y paz. La llave de este papel es la palabra ATTEMPT. A= Avance en la educacion internacional, carece de prueba en la aplicabilidad universal. T= Contactos transnacionales para realizar este proposito de recursos de SALT y sociedades hermanas. T= Tests a escala internacional, propocionando experiencia. E= Establecer escuelas fomentando el uso del metodo dandolo a entender con estos tests. M= En minoria dar gratis la introduccion al metodo para ayudarlos a proporcionar mas alla de la prueba. P= Gente a gente en contacto a lo ancho del mundo atraves de otras sociedades con intereses paralelos como la Liga de Esperanto de Norteamerica, Los Ciudadanos del Planeta, y el Instituto de Ciencias Noeticas. T= Transformacion de la educacion de esta manera.

AUTHOR INDEX

Anderson, LD 177
Andrade, LM 103

Bass, JAF 3, 67
Bass, RV 3
Brown, R 13

Carlson, ME 251
Caskey, O 137
Cooter, S 83

Erskine, R 225

Foster, C 33

Gassner-Roberts, S 115

Hand, JD 25, 149, 233

Machado, L 103
Moon, CE 251

Portes, P 33
Prichard, A 41, 167

Racle, G 57
Render, GF 177
Roberts, SG 115

SALT Society 60, 61, 63
Schuster, DH 185, 263
Senatore, J 131
Stanton, HE 193
Stein, BL 25, 149, 233
Strudel, L 49

Taylor, BT 279
Taylor, J 41
Tsunoda, T 57

Wark, DM 203
Wilson, KM 123

TOPIC INDEX

accelerated learning & self-concept 33
accelerating concept formation 137
accelerating learning & 3 fingers 193
accelerative learning & brain 25, 149, 233
adult students & writing 3
attempt to transform education 279

beta endorphins 149
book reviews:
  Japanese Brain 57
  Master Teaching 131
brain & accelerative learning 25, 149, 233

Cleveland's Master Teaching 131
cognition & emotion 103
college freshmen 67
college developmental math 167
computer language, Pascal 263
concept formation 137
concert session differences 49
curve of forgetting 177

different concert sessions 49
direct vs. indirect suggestion 123

East Germany & language classes 49
  & research 115
Ebbinghaus forgetting curve 177
educators, suggestions for 233
elementary school & self-concept 33
emotion as key 103
emotopedia 103
endorphins & enkephalins 149
English composition 3
English grammar 83
exam improvement & 3 fingers 193

fantasy journeys & self-concept 251
five year study 83
focus strategy 137
forgetting curve 177
formative causation & brain 25
four year olds & suggestibility 123
France & concert session 49

GDR research 115
grammar rules 83
guided imagery & self-concept 251

hemispheric brain functions 149, 233

imagery & study skills 203
  & writing 203
industrial paper users 185
intelligence's secret 103
international education 279

language classes 49
learning disabled & math 225
limbic sytem 103, 149
Listed Thought Procedure 3
long term memory LTM 149

MacLean's triune brain 149
mathematics, college 167
math project & suggestopedia 225
mind modules 233
misuse of suggestion 103
multiplication tables 225

paper users' course 185
Pascal computer language 263
pattern recognition 25
perception 25

Piers-Harris Scale 33, 251
punctuation rules 83

remedial reading 41
retarded students 13
retention & Superlearning 177

SALT,
  & college math 167
  & computer language 263
  & concept learning 137
  & English composition 3
  & moderately retarded 13
  & paper users' course 185
  & remedial reading 41
  & structural analysis 67
  Affiliation procedures 63
  Society By-laws 61
  Society Constitution 60
scanning strategy 137
secondary school & self-concept 33
self-concept & accel. learning 33
  & fantasy journeys 251
self-image & math 225
Sheldrake hypothesis 25
short course on paper 185
short term memory STM 149
special education 13
Stanford Diagnostic Reading Test 41
structural analysis 67
study skills & imagery 203
suggestibility & four year olds 123
suggestion, direct vs indirect 123
suggestions for educators 233
Suggestopedic language classes 49
suggestopedic math project 225
Superlearning & retention 177

taxon-locale brain model 149
three-fingers technique 193
transforming education 279
triune brain model 149, 233
Tsunoda book review 57

United States & language classes 49
university class & Pascal 263

vocabulary learning 67

writing 3
  & imagery 203